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September 3, 1990 • #73
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On Minicomputers: *"We're going to kill them."*

See story beginning on page 54

JIM WARREN ON LOOK AND FEEL:

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See page 24

THE OFFICE EMERGENCY:

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See page 38

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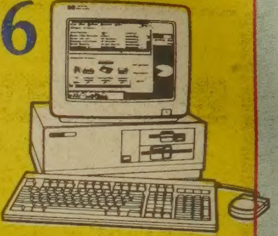

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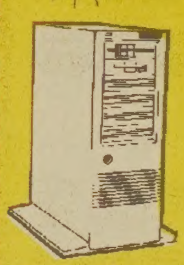

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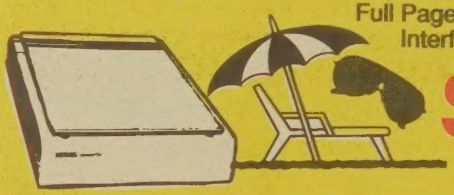

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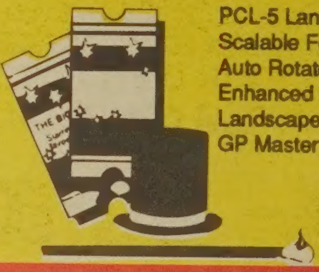

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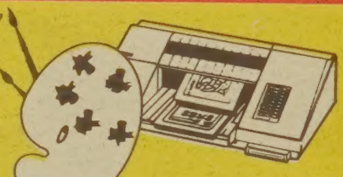

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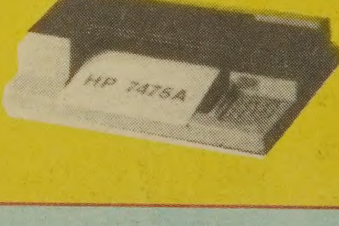

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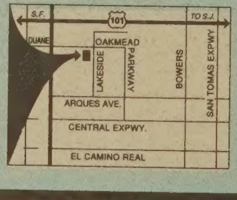
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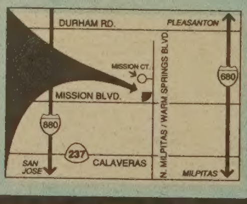
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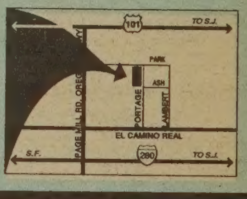
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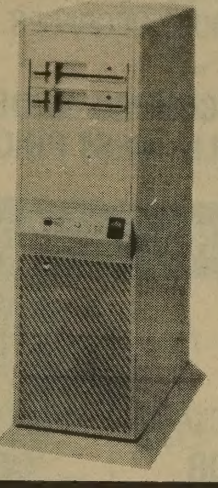

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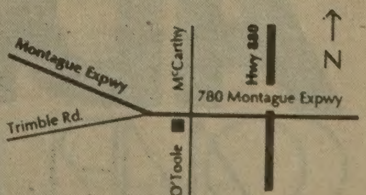

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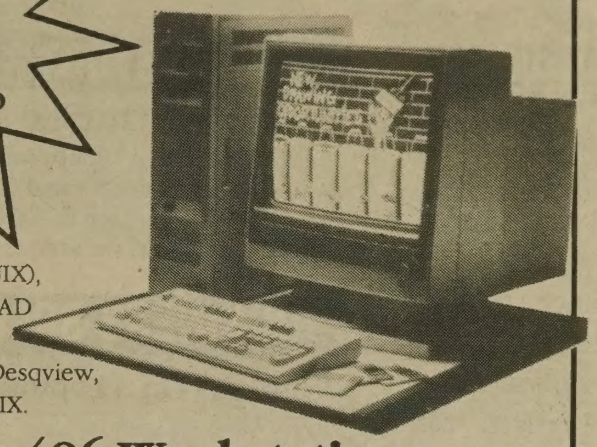

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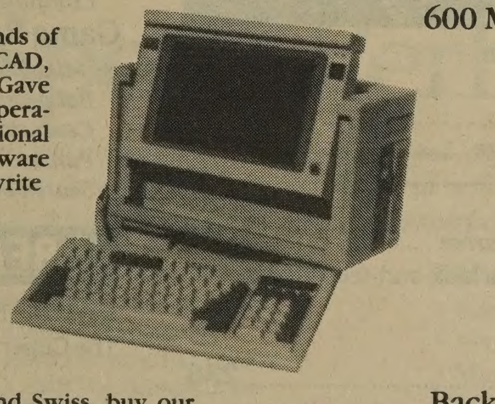

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When we first wrote about AST Research back in 1985, it was very much a small entrepreneurial organization on the way up. Today it's a huge multinational systems vendor, and just posted record revenues for fiscal 1990 after last year's reorg-related losses.

Contributing editor Wayne Yacco made the trip to AST's Irvine headquarters last month and spoke with cofounders Safi Qureshey and Thomas Yuen. They talked about the company's development as a provider of complete business systems and explained how they're tailoring the company to meet the needs of domestic and international business. See page 54.

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AST Takes On The Minicomputer 54
By Wayne A. Yacco **Photo courtesy of AST Research, Inc.**
Founders Safi Qureshey and Thomas Yuen talk about AST's transition from startup board vendor to multinational systems supplier, as well as the unique needs of today's business user.

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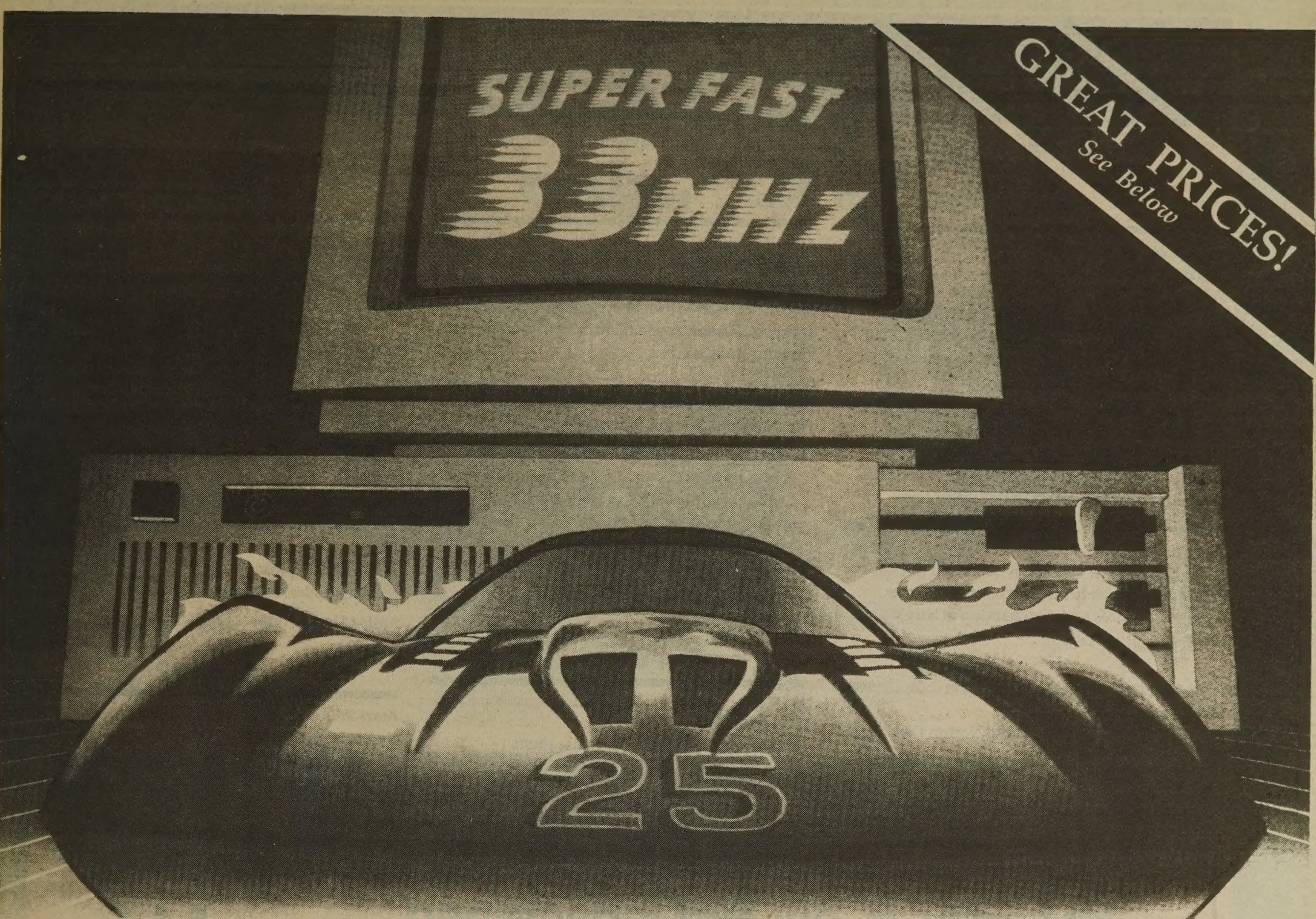

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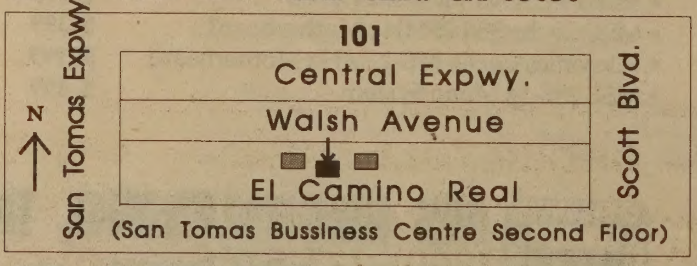

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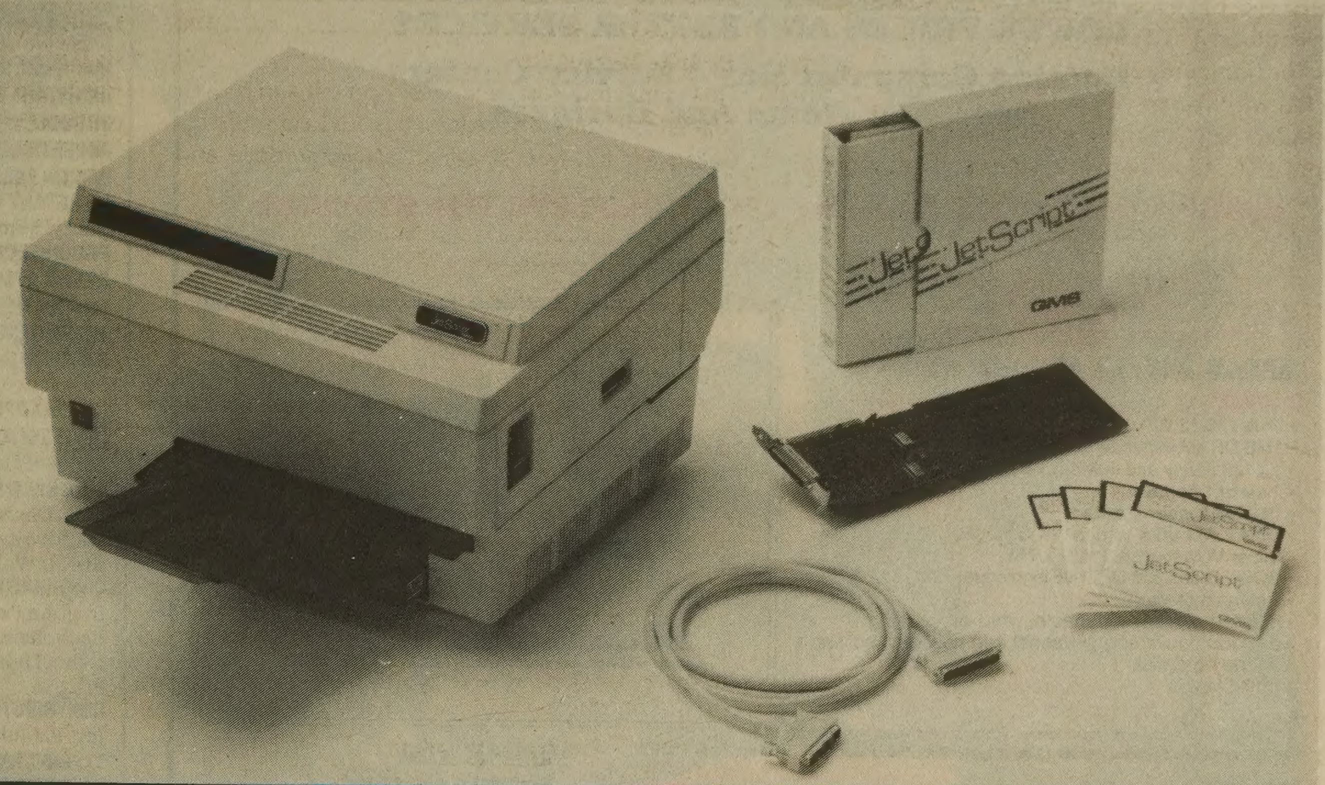

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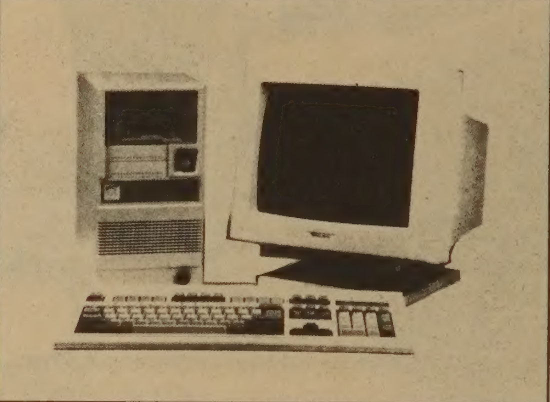

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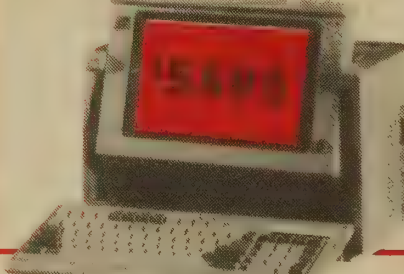

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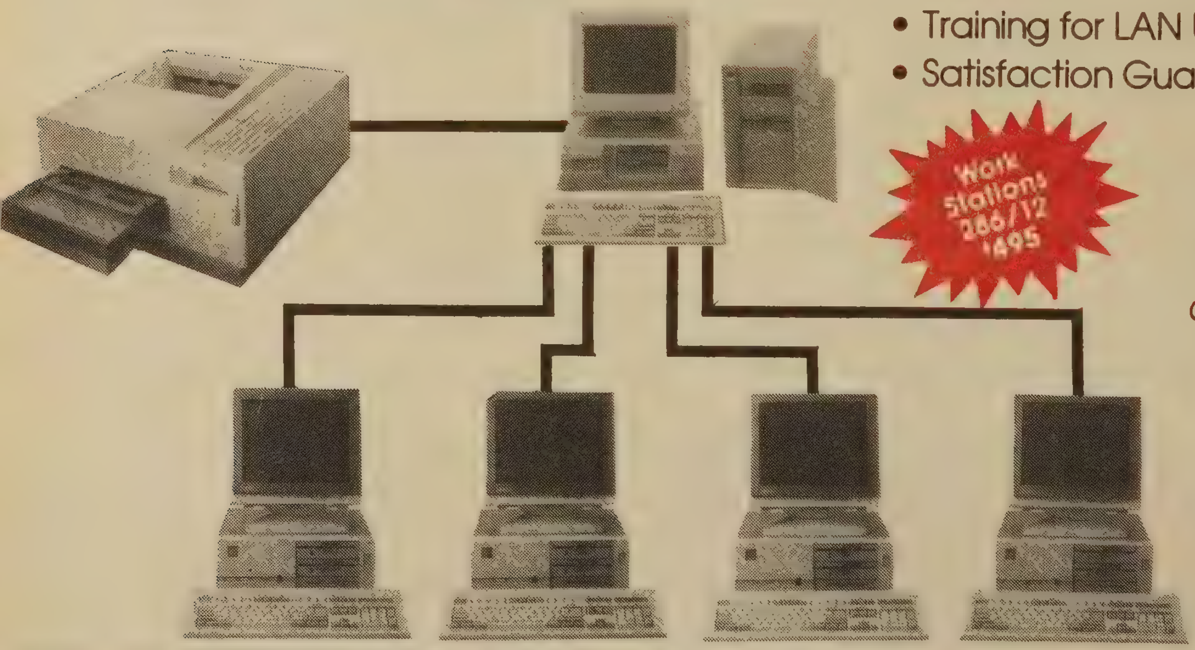

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NEWS & VIEWS

INDUSTRY INSIGHT

BY PAUL HOFFMAN

LITIGATION THROUGH ADVERTISING

Recognizing that it takes years for court cases to be decided, litigants in two major copyright cases have taken their arguments to the consumers in major advertising campaigns.

Borland, recently sued by Lotus after Lotus won its look-and-feel case against Paperback Software, has taken out full-page ads in many computer journals showing the obvious differences between Quattro Pro and 1-2-3. Computer Support Corporation (CSC), makers of the popular Arts & Letters clip-art series, has taken out ads in many magazines pointing out that Software Publishing Corporation (SPC), the publisher of Harvard Graphics, stole its artwork and then attempted to get a court to say that clip-art is not copyrightable.

Borland's ads in such industry magazines as *InfoWorld* and *PC Week*, as well as the *Wall Street Journal* and the *New York Times*, take direct aim at Lotus's lawsuit with the tag line, "Judge for yourself." They state that "Quattro Pro is radically different from Lotus' 1-2-3" and "At Borland, we believe in software craftmanship and are fighting for your access to *real* innovation." The screen dumps show the large differences in the way that the screen looks when many worksheets are open at the same time and point out that you cannot view a graph in perspective mode in 1-2-3.

CSC's suit against SPC is somewhat more contentious. Last year, SPC asked CSC to license some of its clip-art for use in Harvard Graphics. In April of this year, SPC filed a suit in federal court asking the judge to rule that clip art is not protected by copyright laws.

CSC, about one tenth the size of SPC, countersued. At the same time, it took out ads in major computer magazines pointing out the dangers of SPC's suit (if it wins) as well as showing that SPC clearly stole the art from CSC. The ads show both inadvertent and purposeful errors that CSC made in its art, errors that appeared identically in Harvard Graphics. For example, CSC's picture of the Stealth bomber was based on an artist's rendition in 1988. That picture had sharp creases in the wings and wing flaps, neither of which appeared in the actual bomber. The picture that comes with Harvard Graphics has both of the erroneous features.

By going to the public with their claims, Borland and CSC hope to embarrass their competitors. Given that many people in the computer industry are exasperated with the amount of litigation that is taking place, they will probably be at least partially successful. Borland, although a large company, can easily make Lotus look like a bully and a company run by lawyers, not computer professionals. Similarly, CSC hopes that it can portray SPC as a group of thieves who were caught in the act and are trying to weasel their way out of a suit by claiming that clip-art is not copyrightable. Advertising is not free, of course, but it works much faster than waiting what will probably be many years for a judge to decide a case.

In the end, of course, it should be the consumer who decides what products should and should not be in the marketplace. Certainly, Quattro Pro is doing very well and is steadily eroding 1-2-3's dominance. Since the decision in *Lotus v. Paperback Software* is recent, consumers have not had time to formulate a plan to react to the case. For example, people who feel that the judge was wrong about the intent of the Copyright Act could lobby Congress to change the law. They could also decide to wait out the appeals process, which will definitely take at

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Paul Hoffman is an industry analyst who has been covering microcomputer technology for ten years. He can be reached on USENET (phoffman @well) and MCI Mail (264-3171). He also writes popular microcomputer books.

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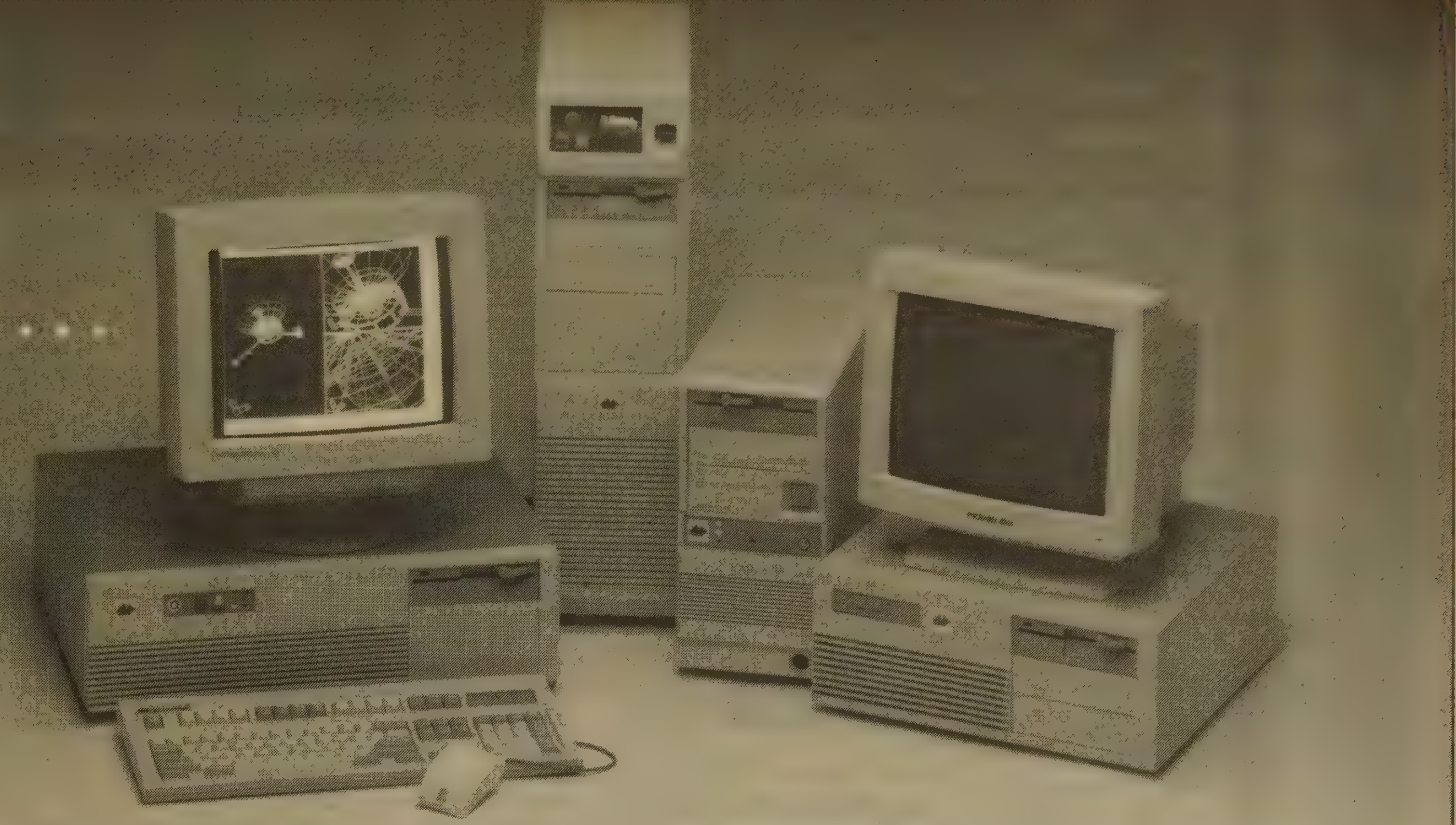

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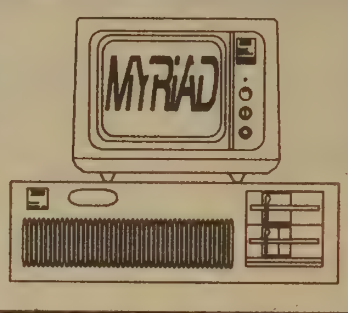

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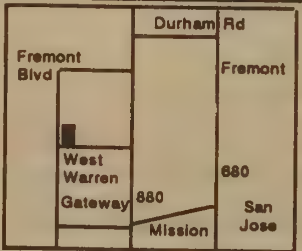

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Lotus has not taken out ads that say, "We won in court—now you should buy our product," but its lawsuit against Borland is a clear attempt to force Quattro Pro out of the market, or at least to bleed Borland for lawyers' fees.

GOVERNMENT DROPS NEIDORF CASE

The case against Midwestern hacker Craig Neidorf was dropped by the US government after it became clear that their contention that he had stolen something of value was bogus.

The case came to national attention recently when the newly formed Electronic Frontier Foundation took Neidorf's plight to heart and helped support him. Neidorf, the publisher of *PHRACK World News*, a phone hacker's newsletter published online, was accused of publishing a document that was allegedly stolen from BellSouth. BellSouth had told federal prosecutors that the information was proprietary and worth $80,000; during the trial, however, a BellSouth representative admitted that the document (a description of the 911 phone system in the south) was publicly available for $13.

Even though the case was dropped, many people have pointed out that Neidorf, a senior in college, had to spend large amounts of money on defense and that his computer equipment was seized.

NEW COMPUTERS FROM SUN AND TANDY

Companies often have very different views of the "low end" of the market. Last month, both Sun and Tandy announced new computers to attract more people at the low end of their markets. Sun's computer, however, is more than ten times as expensive as Tandy's, since Sun's target market is the office that needs workstations and Tandy's is the home that needs a small business computer.

Sun's SPARCstation IPC, a color system that runs at 15.8 MIPS (about the same as the fastest 80486-based systems), costs $10,000 and comes with 8Mb of RAM, a 200Mb hard disk, and an Ethernet interface. It includes a 16-inch color display and the SunOS UNIX operating system. According to Sun a similarly outfitted PC system would cost almost twice as much. Sun said that it was attempting to bring Fortune

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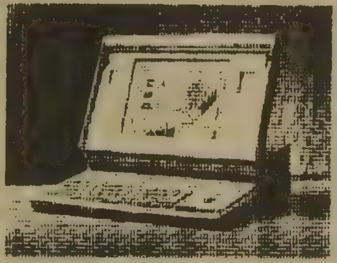

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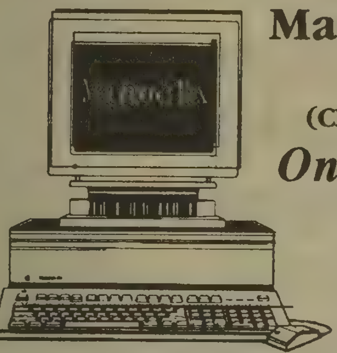

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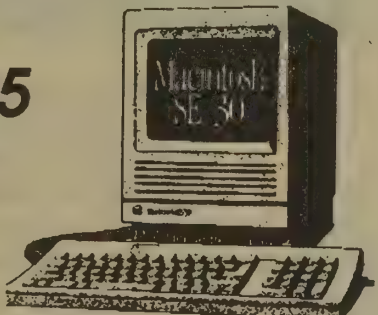

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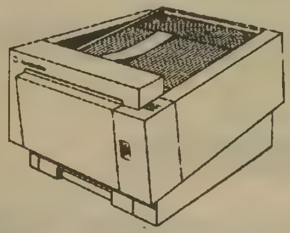

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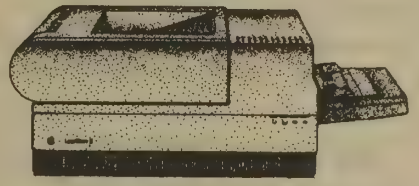

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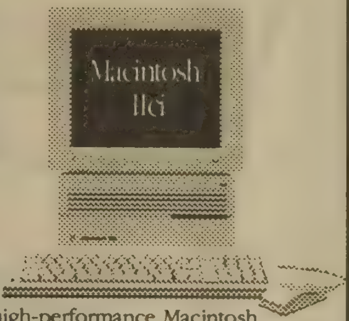

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Macintosh® IIcx /40

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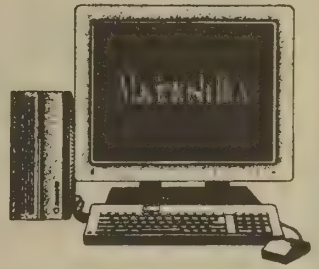

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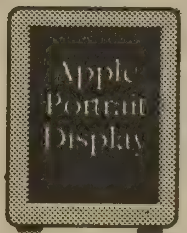

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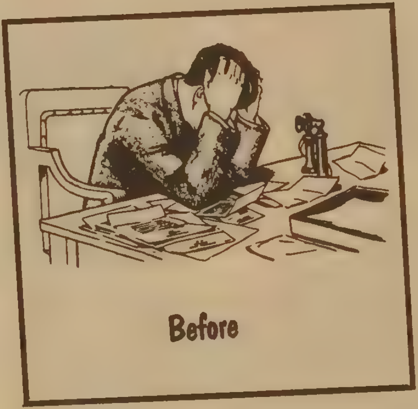
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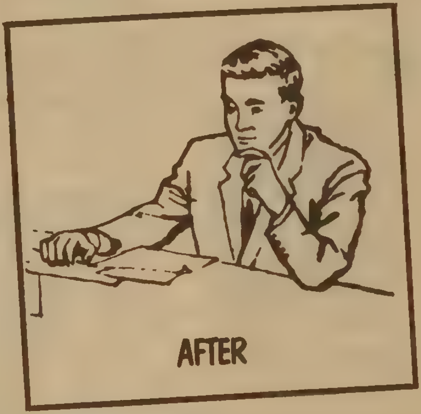
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In a related announcement, Sun signed agreements with Entre, Connecting Point, MicroAge and NYNEX to sell its computers in retail stores. Like NeXT's agreement with Businessland, this may amount to giving potential Sun customers a convenient place to go kick tires, but it may also turn into a boon for those stores, since they could show off systems with high prices to large customers.

Sun's computer is more than ten times as expensive as Tandy's, since Sun's target market is the office that needs workstations and Tandy's is the home that needs a small business computer.

Tandy's home computer, the 1000RL, competes with IBM's newly announced PS/1. The 1000RL series costs much less than the PS/1, but offers a much slower CPU, less memory, and lower-resolution screen. Even with these defects, Tandy may do much better with the 1000RL than IBM with the PS/1, since it will be available in all Tandy stores where the sales staff need much less training to sell to the home market. Like the PS/1, the 1000RL comes with an easy-to-use interface and most of the applications software that people would want for a home computer.

As an interesting twist, the computer is the first to come with the Good Housekeeping seal of approval.

WINDOWS 3 VS. MACINTOSH REVISITED

Now that Windows 3 has been out for a few months, many people have had a

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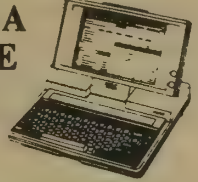

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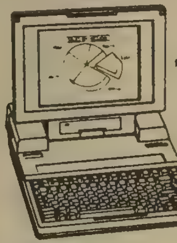

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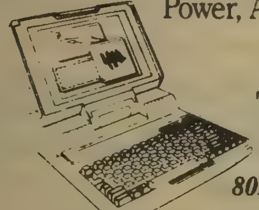

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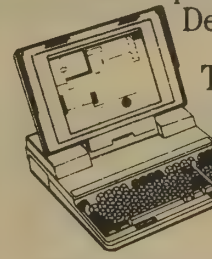

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chance to look at it and decide how important it is for them. The initial speculation that Windows 3 would have a serious effect on the Macintosh market has died down as people see that it is, basically, a Microsoft product steeped in history and burdened by MS-DOS. While using applications under Windows 3 is clearly easier than using standard MS-DOS software, most people would agree that it is still more difficult than using a Macintosh.

The level of similarity between the two environments is deceiving, as many people have discovered. Computer magazines, who said at the rollout that this was the beginning of the end for the Mac, have recently been running "executive surveys" indicating that the release of Windows 3 has, in fact, not affected corporate Mac strategies. In many ways, Windows 3 is not much better than Windows 2, and many large companies knew that well enough ahead of time to not let Windows mania change their long-term buying plans.

One of the biggest disappointments for PC users was that Windows 3 adds such a large overhead that you really need a fast 80386 and at least 2Mb of RAM to make Windows applications seem like they are running "fast." Although you can get such a system for much less than a Mac that runs programs at the same speed, many users' expectations were that they could load it up and go. Those who decided to upgrade their PCs to meet these requirements for Windows 3 came across one of the PC's most notorious features: upgrading is a massive pain in the neck. Upgrades are not standard; the documentation that comes with upgrade hardware is generic and often incorrect for most clones; after hardware upgrades you must diddle with your Autoexec.bat and Config.sys files (if you know what they are); and there is no way to be sure that the upgrade would work on anything but an IBM machine. In other words, it is a scary and frustrating experience.

Upgrading a Macintosh, on the other hand, is fairly simple. Most users do not want to do the upgrades themselves, and Mac stores usually charge $25 or less for RAM upgrades. If you do it yourself, there is basically only one kind of RAM; it snaps into one kind of slot, and you can tell immediately if it worked. After installing RAM on a Mac, there is no need to alter any files or to "tell" your system what you have

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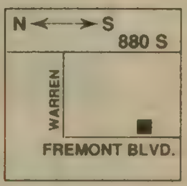

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done.

Once you have upgraded, installing Windows 3 is significantly more difficult than installing the system software on the Mac, particularly for novice users. To set up Windows, you must know a fair amount about the technical specifications of your system; to set up a Mac, you simply copy files. Windows 3 differs significantly from Windows 2 in the way it treats "extended" versus "expanded" RAM memory, and you need to understand the differences in order to set up either version properly. In fact, the way you should set up your RAM for Windows 3 is the opposite of the way that many non-Windows applications want it.

Once you are set up and running, there are fewer differences between Windows 3 and the Macintosh immediately visible. (However, getting to that point is so daunting that many people reported giving up on the installation process.) Once in applications (Windows 3 comes with fairly reasonable word processing, paint, and communications applications), people who rely on keyboard entry become almost immediately frustrated. On the Mac, the standard keyboard equivalents are much easier to remember than they are under Windows. Quitting a program, for example, is Command-Q on the Mac and Alt-F4 on Windows. People used to complain that the standard keystroke for closing a window on a Mac, Command-W, was hard to remember; after they use Ctrl-F4 on Windows, they complain less.

One of the biggest selling points for graphical user interfaces is how easy they are to use, yet it is clearly more difficult to learn Windows applications than it is Macintosh applications. For example, many PageMaker training centers say that it takes almost twice as long to teach a novice PageMaker on Windows, even though the interface is nearly identical. Whenever the interface differs, they find, Windows is almost invariably harder to use.

From an operating systems standpoint, the Mac will probably not loosen Microsoft's grip on the Intel-based PC market. Apple will always be way behind the clone market on hardware price, which turns out to be much more important than Apple has ever publicly acknowledged. You can get a solid Windows-based computer system for about half of what you would pay for a similarly powered Macintosh. With all of its faults, that is still a great deal of money.

The emergence of Windows 3 does not affect the Macintosh market, except for PC users who haven't used Windows (but hope to) or used a Mac but want to feel better about their choice of inexpensive but hard-to-use hardware. ■

> **Those who decided to upgrade their PCs to meet the requirements for Windows 3 came across one of the PC's most notorious features: upgrading is a massive pain in the neck.**

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- REAL TIME CLOCK W/BATTERY BACKUP
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- 2 FL/2HD CONTROLLER
- 200W PS W/CASE HOLDS 5 DRIVES
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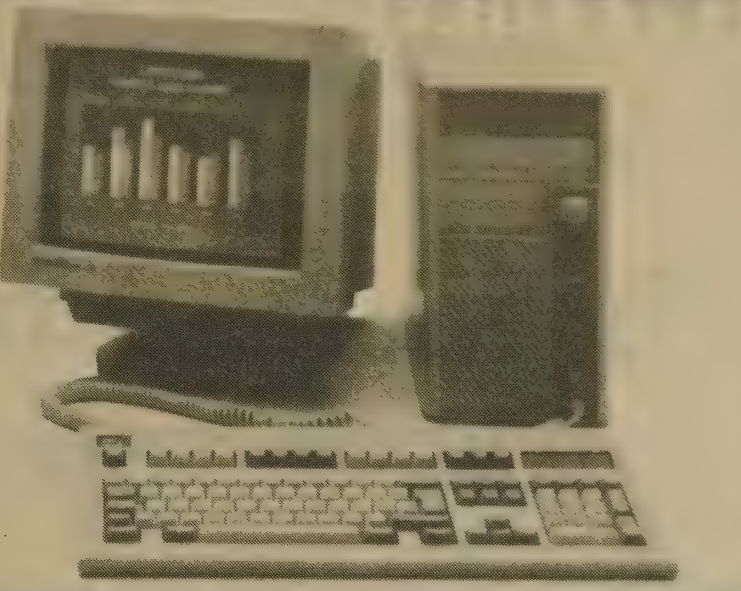

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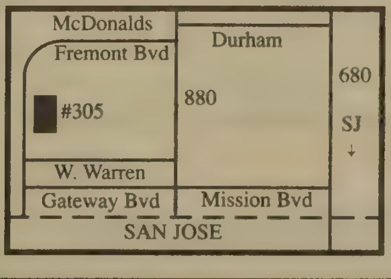

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Increase User Power, Avoid Look-and-Feel Litigation

REALIZABLE FANTASIES

BY JIM WARREN

Which automobile manufacturer first used the "H" pattern for the transmission shift mechanism? Which furniture maker first offered a chair with four legs? Boy, are *they* gonna clean up, now that Lotus has won its "look-and-feel" litigation!

SIMPLE SOLUTION TO LOOK-'N'-FEEL REPRESSION

There's an almost-trivial solution to this look-and-feel mess: Allow users to configure their user interfaces. This is usually easy to implement, and it gives users very valuable added capability and independence. Here's how:

Keystrokes are used to command and control most computer programs. Such programs—if well designed internally—have a keyboard-input routine with a decision-tree or jump-table that determines how to handle incoming keystrokes—individually and in sequences.

So: Permit the user to define which keystrokes and keystroke-sequences they wish to use for which commands, and their visual representation. Allow the user to implement this through a setup routine that watches for and prohibits ambiguous command sequences.

Software producers could then ship their programs with whatever weird default command-set they choose—giving it a look and feel clearly different from any competitors who prefer litigating rather than innovating. Users can reconfigure the command-set however they desire, whenever they desire.

Software producers might even publish their competitors' command-sets, to aid nontechnical users desiring such configurations. (So far at least, the legal beagles haven't figured out a way to suppress our freedom to *describe* command-sets.)

Copyright © 1990 by Jim Warren. All rights reserved. Jim Warren founded InfoWorld, *the DataCast proposal for broadcast-based paperless electronic newspapers, Video Initiative, Wireless Digital, Initiative, Inc. and the nation's largest public microcomputer convention. He was founding host of PBS television's "Computer Chronicles" series, founding editor of* Dr. Dobb's Journal, *founding President of the Microcomputer Industry Trade Association and has chaired various computer professionals' organizations. He holds graduate degrees in computing (Stanford), medical information science (UC Medical Center), and mathematics.*

BORLAND'S BEAUTY

When I use keyboard-controlled software—mostly in pre-Mac days—many of my favorite programs are from Borland. Part of the pleasure of using Borland's programs derives from their allowing me to configure as many commands as I desire. This is invaluable, given the PC's chaotic babble of unmemorable, conflicting commands across various applications—by far, the PC's most significant problem, one entirely unresolved by Windows' pretty pictures.

USER-CONFIGURABLE GUIS

In at least several useful ways, such user control over configuration could also be offered for Graphical User Interface—e.g., the Mac desktop, PC Windows, X-Windows, etc. (That could avoid the not-yet-successful look-and-feel litigation over GUIs; more attempted repression is surely coming.) GUI configuration examples:

Allow the user to configure whether they want a one-button or multi-button mouse (sacrilege in many Mac circles), and configure each mouse-button's meaning. Allow them to specify the meaning of one click, two clicks and three clicks, etc. (Contrary to popular belief, the Gods did *not* ordain that "drag" requires holding the button down.)

Allow users to specify keystroke and keystroke-sequences for menu items. Allow them to specify menu type-font, size, location, format, retention ("tear off"), *etc.*

Allowing users to configure command and control functions and representation greatly enhances utility and facilitates defense against consumptive look-and-feel litigation.

MAC WHINES

Mac software publishers: *Please* stop requiring that your products' folders be labeled "<*full product name*> Folder". C'mon folks—a Mac ain't a PC; the icon *shows* that it's a folder. (A "folder" on a Mac is like a subdirectory under MS-DOS. Can you imagine having to name many of your PC subdirectories, "<*product name*> Subdirectory"? Dumb, dumb, dumb!)

It would be glorious if more software publishers documented which file-names and directory-names must remain fixed, versus those the user may change or abbreviate. Allow the latter. (Filenames don't *really* have to include the full product name, plus trademark, plus version number.)

Also, document when a file must be in a specific folder/subdirectory. To the extent possible, let users put 'em where they want 'em.

Borland's programs allow me to configure many commands as I desire. This is invaluable, given the PC's chaotic babble of unmemorable, conflicting commands across various applications—by far, the PC's most significant problem, one entirely unresolved by Windows' pretty pictures.

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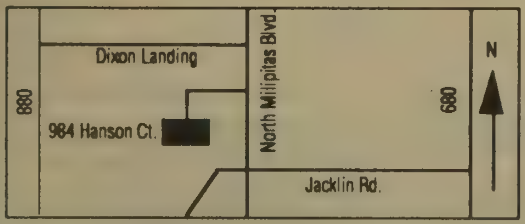

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Send suggestions to Jim Warren, Realizable Fantasies, 345 Swett Rd., Woodside, CA 94062. Published proposals will be attributed to their authors unless anonymity is requested.

QUICKIES

Jim Rea's neat database system (Panorama for Macs, from ProVUE, 714/892-8199) includes a surprisingly useful intro/training videotape. As customary with videos, its credit lines list its participants—including "Stunt Typists."

Mail-order megabyte memory SIMMs cost only $70-$100, usually *sans* state taxes. So, why do folks *screech* about major productivity software requiring two megs or more—especially when the software costs $100-$4,000 and computers cost $2,000-$8,000 or more? (Maybe it's 'cause memory's harder to pirate.)

I hear that Sun configuration utilities include one entitled, "SCSI Weird." (After furiously fumbling with numerous combos of cables, terminators, and daisy-chains to get six SCSI devices to mostly work, I better understand why the Small Computer Systems Interface is called, "scuzzy.")

Just for hardware junkies: Have you heard about the new technology referenced in a memo prepared by one Silicon Valley secretary?—"Peach-Handle" semiconductors (say the phrase; imagine the embarrassment).

Students of the University of California at Santa Cruz (I affectionately call it "Uck Suck") have a delightful practice. At the end of a course, if the professor or teaching assistant has been especially good, they applaud. Even nicer, they don't applaud poor or mediocre instruction—thus retaining it as meaningful, earned praise. ■

Which automobile manufacturer first used the "H" pattern for the transmission shift mechanism? Which furniture maker first offered a chair with four legs? Boy, are they gonna clean up, now that Lotus has won its "look-and-feel" litigation!

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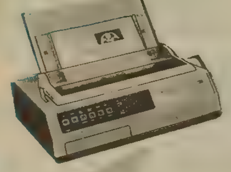

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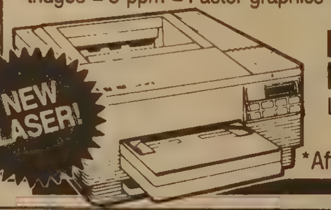

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BUSINESS SOLUTIONS

Windows On A Laptop:

Almost As Good As A Portable Mac

BY ED KAHN

The big bomb of 1990 has exploded upon the world of computing. Windows 3.0 ($149) has been released. While this product is not specifically intended for the laptop market, its impact is sure to be felt there.

This product sets the stage for the rug to be pulled out from under Macintosh. For the rug to be successfully removed, there will have to be supporting products that work in tandem with Windows...and these are slow in coming although an amazing number of software packages are currently available. Nevertheless, the release of the newest and best version of Windows does not in itself do much more than open the door.

When you install Windows on your computer—a simple procedure that is easily explained in the documentation and requires between 6 and 8Mb of hard disk space—you will be able to operate your computer from a mouse with a true graphical interface. (Microsoft sells a combination package that includes both Windows and a serial mouse for $225.)

For years, people have chosen Macs because of their ease of operation. Increasingly, that argument will be something out of the past. And with the dearth of Macintosh portables, the laptop market belongs almost exclusively to the IBM/compatible marketplace.

So now, for a few bucks, you can install a program on your portable that will make it operate as much like a Macintosh as possible. When you couple this with applications that are available for Macintosh, it is simple to use an IBM style portable and port the data files back to a Macintosh desktop machine.

SO WHAT'S THE BIG DEAL WITH WINDOWS 3?

Windows has been around for a long time, so why all the fuss about a new version? A number of changes make the new version a major step forward.

First, unlike previous versions, the new one allows you to run your regular DOS applications from within Windows. Not that these older non-Windows applications will run from the graphical interface that you can control with a mouse, but you are able to call these applications up from within the Windows environment. This is where the Mac still has Windows beat—for now. On a Mac, all applications are always made to fit into the graphical interface format and all applica-

> **For a few bucks, you can install a program on your portable that will make it operate as much like a Macintosh as possible. When you couple this with applications available for Macintosh, it is simple to use an IBM style portable and port the data files back to a Macintosh desktop machine.**

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tions can be run with a mouse in similar fashion. Once you know how to run any application on a Mac, the other applications are pretty similar in appearance. As more and more programs are written to the Windows specifications, that will be the case for DOS programs running under Windows as well. A standard interface is finally emerging.

A second major advance with the new version of Windows is that it will automatically configure itself to the capabilities of your computer. It runs at its maximum strength on an 80386. In this configuration, it allows true multitasking. Also, it will allow non-Windows applications to run within smaller windows rather than requiring the whole screen. On less powerful machines, these applications all take the entire screen. On 386 machines, you can get real multitasking of non-Windows applications.

A second configuration is what Microsoft calls Standard Mode. It runs on 286 machines with at least 1Mb of memory—meaning that there is about 360K of extended memory. The more extended memory, the faster it operates. This mode also allows you to switch among non-Windows applications by utilizing the extended memory.

A third configuration is Real Mode—designed to run applications that were compatible with older versions of Windows, but not yet upgraded to the current version. This is also the only configuration available to computers with less than 1Mb of memory. This means that older computers with a bare 640K will be restricted to running in Real Mode.

In order to get real benefit from Windows 3.0, it is necessary to have a computer with at least an 80286 and 1Mb of memory. This includes many of the portables we regularly discuss. While I still see a lot of use for the ultra lightweight boxes that have no hard disk and a basic 640K, I feel that a year or so from now these will seem like outmoded machines. As time moves on, the Windows interface will become the standard interface. More and more new software packages are being prepared to accommodate the Windows interface.

While this is the wave of the future, it is still in its infancy. It will take a long time for all of the applications on the market to develop smooth interfaces with Windows. If we look at the Macintosh market, it is amazing how few word processors, for instance, have really been able to make the transition to the Mac interface. This is one of the advantages Microsoft Word has. It works equally smoothly on the Mac or DOS machines. ■

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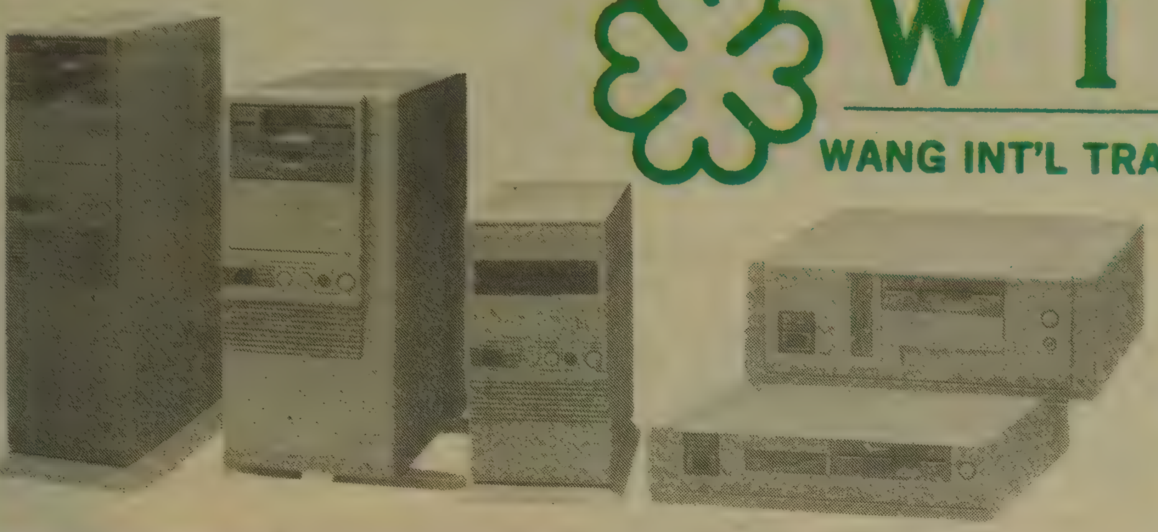

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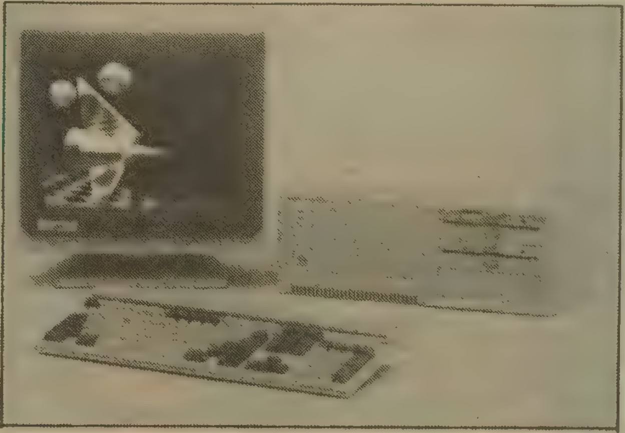

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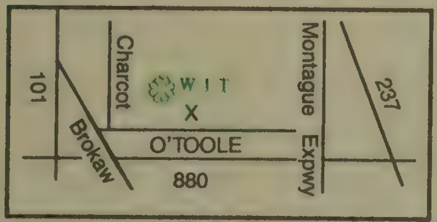

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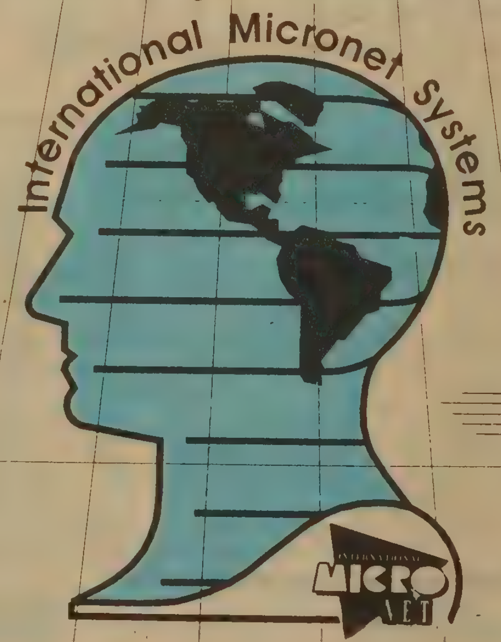

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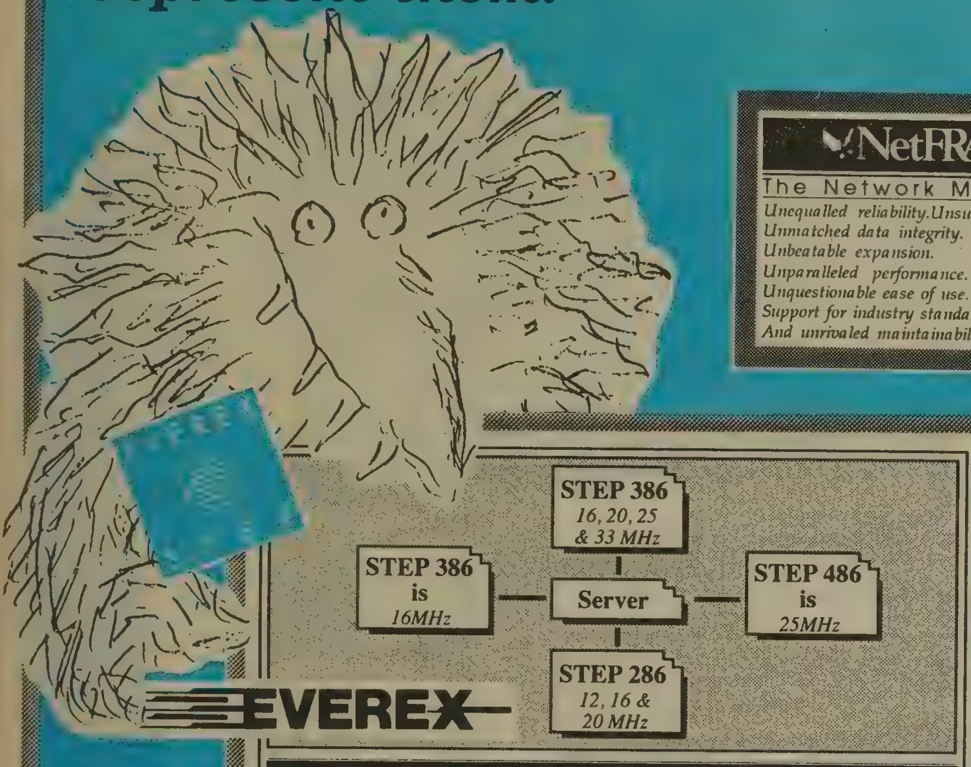

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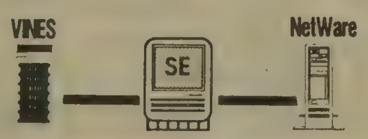

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Computer Of The Month:

The Packard Bell PB286LP-VGA

As I've indicated in the past, a standard configuration these days for a laptop includes a 40Mb hard disk. With the introduction of the new Windows, this becomes all the more important because of the disk space required for the package and mouse driver. A 20Mb disk which devotes 6 to 8Mb to Windows doesn't leave all that much room for applications and data. More and more manufacturers are offering the 40Mb hard drives as standard equipment.

Packard Bell, which had a successful laptop in the PB286LP, has introduced a successor model with a full 40Mb hard disk as well as VGA compatibility, bringing their product up to modern standards. The new model offers not only the larger hard disk and higher resolution video, but also provides a good deal of flexibility through the inclusion of a number of ports and the availability of lots of options.

The machine is the familiar clamshell design with the display hinging up to reveal a keyboard. The display is an attractive high contrast black-on-paperwhite background and measures 9.75" diagonally. The contrast and brightness controls sit just below the display for easy access.

The keyboard has 82 keys laid out in a familiar pattern. Although there is an embedded numeric keypad and an **Fn** key, Packard Bell has wisely included cursor control keys and separate **Home, End, PgUp** and **PgDn** keys so you don't have to touch two keys to accomplish these functions.

The PB286LP-VGA has room for lots of expansion. A 2400 baud modem ($269) is available and user installable. You remove the rechargeable battery and then a plate to get into the modem compartment. It takes nimble hands to put it in, but all in all it is not too difficult. Once the modem is installed, you will have no trouble with the unit. It does everything it is supposed to do perfectly and gives you feedback through the speaker so you can follow what's happening.

The machine comes with 1Mb of RAM, which is user expandable to 5Mb by the addition of generic SIMM modules. If you are going to expand the memory, which is configurable as either EEMS 4.0 expanded memory or as extended memory, you

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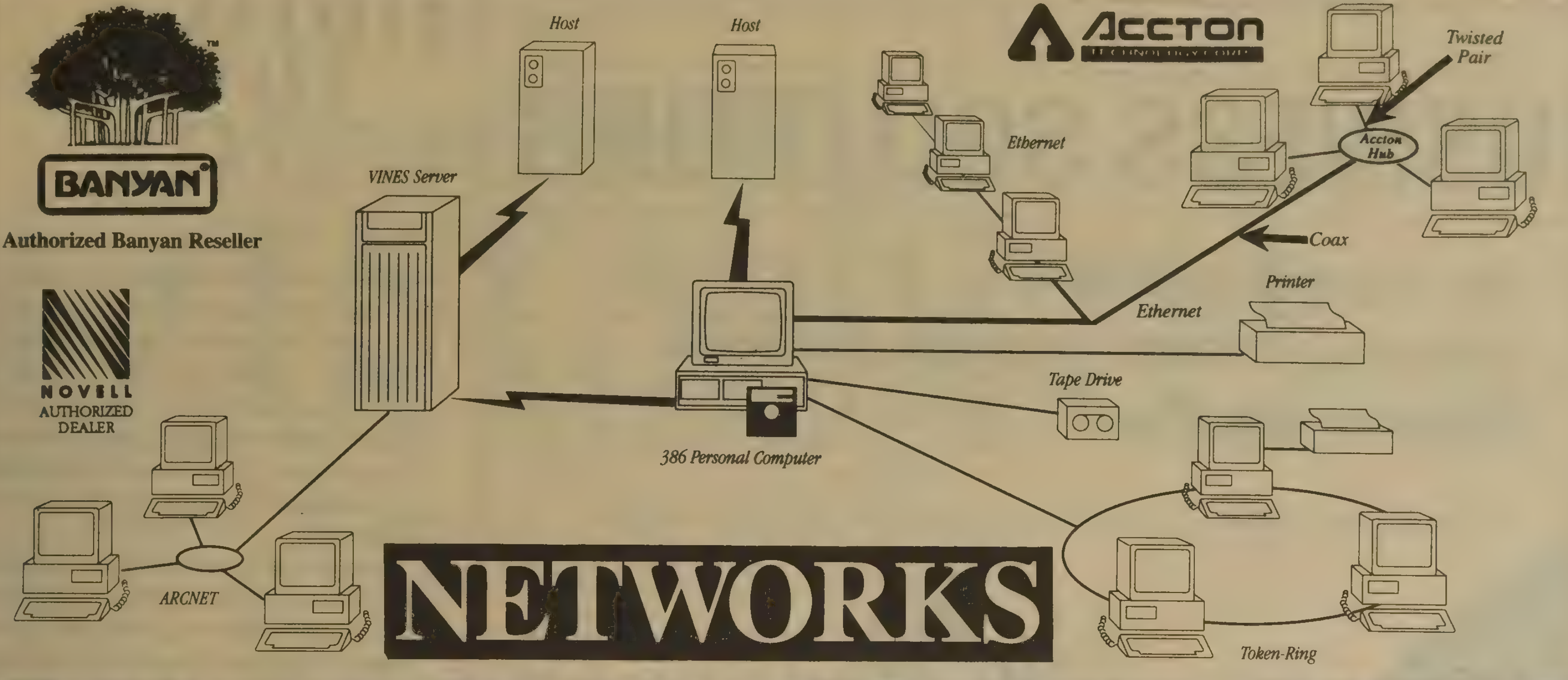
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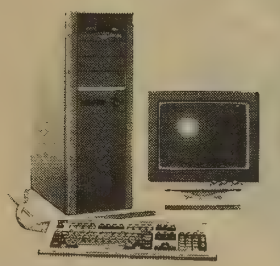

[illegible] ten expansion slots, six half-height drive bays, up to 36 MB of RAM and a heavy duty 300 watt power supply, it can handle your most demanding hardware configurations.

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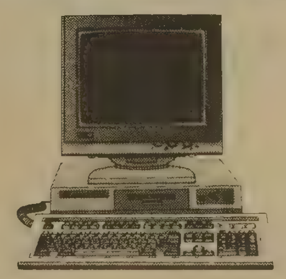

Besides being one of the best performers among the systems tested, the AST Premium 386SX/16 has the advantage of being upgradeable to a full-scale 33 MHz system now, and to a 25 MHz 386 or 486 in the near future. This is a system that will be hard to outgrow.

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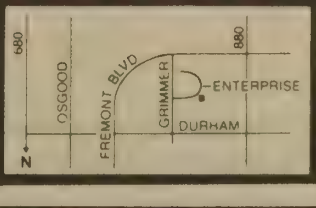
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should do so before installing the modem, as the additional memory installs underneath the modem.

A video port on the back of the machine allows for the use of a standard VGA monitor. Although the user's manual says that if an external monitor is installed, it will automatically come up when you turn on the power, in fact you must manually shift to the external monitor by pressing the **Fn** and the **F10** keys together.

A single serial port is provided, but if you have a modem the system is configurable as if there were two COM ports. This makes it easy to use both the modem and a mouse. An expansion bus connector theoretically allows the use of an expansion bus that will hold up to two standard size expansion cards, although Packard Bell does not offer this accessory. A parallel port and external keyboard port add additional flexibility to the system. The keyboard port allows for the connection of either a numeric keypad ($89.95) or a full PS/2 keyboard.

The system comes with an internal nickel-cadmium battery pack that can run the computer for up to three hours. The included AC adapter allows for running the system for an AC power source as well as for recharging the battery. The computer is designed with overcharge and short circuit protection. A number of energy saving devices are included in the design of the machine. Both LCD and hard disk power-down are provided to conserve energy. When you hit a key, both spring to life. The hard drive, however, takes a little longer, which proved to be an annoyance. The default shutdown is two minutes, which means that in the middle of a session I was often left without instant access to the hard drive. Fortunately, both of these defaults are easily changed through the setup screen.

This is a full-featured computer that performed flawlessly. I find it a bit pricey in view of the availability of a number of excellent less expensive laptops currently on the market. The only real weakness I found, however, was in the user's manual, which is filled with minor mistakes. It looks as though the manual were translated from a Japanese version. The computer comes with a one-year warranty and includes MS-DOS 3.3 as well as GWBASIC. A carrying case ($63) is available. ■

RESOURCES:

Packard Bell
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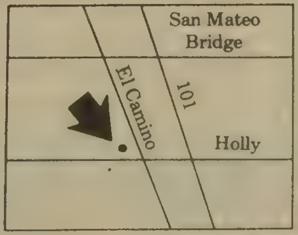

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The Office Emergency And How To Minimize It

Sooner Or Later, Your Disk Will Crash. Your File Server Will Fail. A Virus Will Infest Your System. Someone Will Steal Your Computer. Here's How To Minimize The Damage.

BY MIKAEL BLAISDELL

Copyright © 1990 by Mikael Blaisdell. All rights reserved. Mikael Blaisdell is a consultant to software and hardware companies regarding VAR-marketing, customer support, documentation and training issues. He is also available to in-house Help Desks, and may be reached at (415)865-1323. Electronic mail addresses are: CompuServe id: 70365,1246, or tao@WELL.

Early morning in the office, fresh cup of coffee in hand, all's right with the world...or is it? Something doesn't sound quite right. Something that should be sounding isn't. What...? Uh oh, the network file server's down, and people are getting excited. Looks like it's going to be one of those days...

The new marketing campaign requires that the sales figures for the installed base be correlated to the dealer channel, and compared to the activity levels in Customer Support. Just to make it interesting, the Sales group figures are a function of a dBASE application, the Support team uses TSS/OL, and you have your own favorite DBMS and spreadsheet. The project is doable, but it's going to be quite a learning experience...

You've labored long and hard over this spreadsheet. It's truly a work of art. But, being in a hurry, you didn't save it to the hard disk. Just a few more changes, link to another spreadsheet file, and... what's this? Corrupted file? WHAT DO YOU MEAN "CORRUPTED FILE"!?!?!?

Most of us never need assistance with our computer until that evil day when we need it very badly. We've learned enough to work our way around the everyday functions of our jobs, and to handle the occasional glitches and/or inconsistencies. Maybe our techniques aren't the quickest or the most efficient, but they work: The job, one way or another, seems to get done.

Sometimes, however, we find ourselves up against a new challenge, and/or Mr. Murphy's well-known Law. At such times, even the most gentle of people can become raging maniacs. Call the dealer, call Tech Support, call Field Service—call anyone, everyone, *but get this misbegotten thing back up and running or else... and my data had better be there!*

It's a sick feeling, looking at the machine that we'd taken for granted would always be obediently present, until the day that it failed. Lurking behind the upset of the current situation is the unpleasant awareness that no matter how much we'd like to point fingers elsewhere, the true responsibility is our own. We know that electrical power has been known to fail, and also to cause damage in the process of failing. Power cords are accidentally unplugged, floppy disks are lost or damaged, files are erased in error.

Regardless of whether the problem is a system failure or the requirement for a new application, it's your computer and your job. More importantly, it's your data, and no one is likely to care about it as much as you do. Operating the computer without regard for the probability of errors and resulting losses is a recipe for disaster. Likewise, it is impractical to assume that a minimum set of computing skills will always be enough for you to get your job done. The best Customer/Technical Support starts with you.

HOW PREPARED ARE YOU?

To assess your current status in this area, begin by playing "let's pretend." For example:

Your hard disk just buzzed and stopped working. No sound, no blinking lights. Won't boot, can't be read. What will you do?

First, ask yourself the question that all tech support people absolutely hate to ask: Do you have a backup? (As any support rep will tell you, the vast majority of the time, the answer is no.)

What would it cost you to replace all of your data? Can you replace it all from printed records? Do you still have the master disks for all of your programs? Do you know how to install them? Do you have the manuals?

In the middle of a long process, the screen suddenly clears and displays a message saying (Corrupted File, or Invalid Record Format, or Sector Not Found, or File Not Available). Do you know what to do? Do you know what things to check before you pick up the phone? And what will you do if the phone isn't answered?

The phone rings in the middle of the night, with a voice telling you that there's been a fire at your office. Between the flames and the water used to extinguish them, your computer and all diskettes are a total loss. What will you do over the next few days to run your business?

The above scenarios, while unpleasant to think about, are very real. They have happened to people; they may happen to you some day. The difference between a minor annoyance and a major disaster is entirely up to you and the precautions you take before the situation occurs.

If the answers to your "let's pretend" questions are a cause for concern, the time for action is now.

The cure for the condition is also fairly simple. By imagining a disaster scenario, and practicing your responses to it, you reduce the impact of the problem. You also gain a more accurate realization of the value of your data and equipment, plus a greater understanding of how to make use of them. Your dependency on outside resources is decreased; you're on your way to being "self-supporting" on most issues.

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The "what-if" problem exercises should reveal an essential truth. Every computer system should have a designated System Manager. The System Manager doesn't need to be a programmer, a hardware engineer, or certified "techie" in order to be effective. However, the manager does need to know how the system is being used and what data and programs are stored on it, and how to adequately preserve and protect them. Further, the manager needs to have taken the time to plan for all reasonable problems before they occur, to know what resources will be required and how much is at risk. Finally, the manager must know where and how to go for help—and what to expect once help has been reached.

The general computer user has similar responsibilities to those of the system manager. It isn't necessary that users personally know everything, but they all need to know the basic facts about their computer resources.

SUPPORT RESOURCES: PLAN NOW

The **dealer** or **reseller** who sold you the system is usually the most immediate source of assistance and/or education. Some are good, some not; if you spent some time shopping around, the question of support was probably a major factor in your buying decisions, and you already know what your dealer can and cannot do—and at what cost. If you don't know, now is the time to find out. Financial consultants will tell you that the time to get to know your banker is before you need the loan, and the same is very definitely true of customer support departments.

The "what-if" assessments you have done will have given you all of the data you'll need in order to evaluate the costs of maintenance and/or support plans offered by your dealer. As an added benefit, your preparation will thoroughly impress him and ensure that your name will be remembered later.

What would it cost you to replace all of your data? Can you replace it all from printed records? Do you still have the master disks for all of your programs? Do you know how to install them? Do you have the manuals?

Also, investigate the availability of local **consultants.** Research them carefully before you need them, checking references and getting to know their capabilities. The best con-

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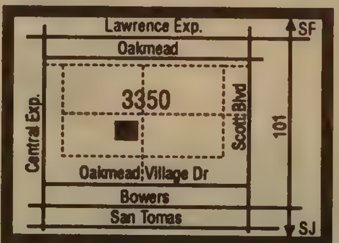

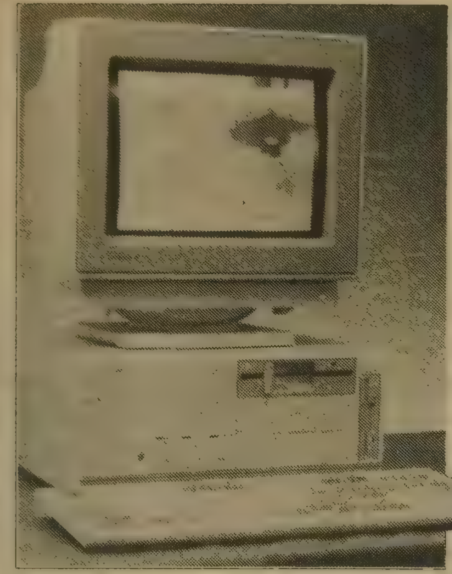

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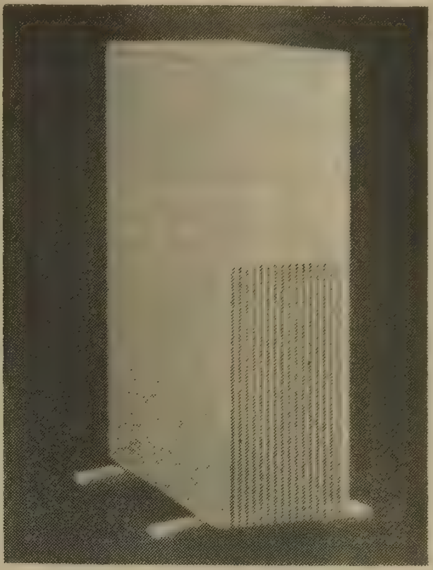

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Operating the computer without regard for the probability of errors and resulting losses is a recipe for disaster. Likewise, it is impractical to assume that a minimum set of computing skills will always be enough for you to get your job done. The best Customer/Technical Support starts with you.

sulting relationships are long-term ones, mutually profitable and balanced. Be wary of getting too good of a deal; such relationships seldom last for very long.

User groups are another source of information and assistance. If there is a local chapter, attend a few meetings and get to know the chapter officers. They can be excellent sources of consultant referrals and reference checks. Plus you'll probably meet other people who use their computers to do tasks similar to yours, and they may be able to show you some improved techniques and tools and/or give you advance warning of potential problems.

The local user group may also offer a **bulletin board**, or one may be available on a national time-sharing service. These are incredibly effective resources. For the cost of a modem and a reasonable access charge per hour, you can ask questions and tap the knowledge base as much as you want.

Free software is often available for downloading, but be very careful in this regard. Simply accessing a bulletin board is safe, but downloaded software can contain viruses and other unpleasant surprises. The national services (CompuServe, GEnie, the WELL, etc.) are likely to be safe, but get to know the system operator and be very careful about using downloaded software.

Local community colleges and adult education schools will usually offer courses in a variety of computer topics, at a reasonable cost. The instructors may also provide consulting services on their own. Note that as your employees' skills are enhanced, they become more valuable to you, and that fact should be reflected in their pay. If you don't effectively recognize their increased knowledge and skill, someone else may.

For hardware service, and even some software products, there may be **third-party (independent) support providers** available to you. Similar to an independent automobile repair facility, some of these may be as effective as, and much cheaper than, the manufacturer's service. The risks involved may be similar as well; be sure to check references and carefully investigate the guarantees. As with a consultant, the best relationship is long-term and mutually beneficial.

The **manufacturer's hotline** is perhaps the most commonly known support resource, and is usually the first to be called when something goes wrong. Increasing the effectiveness of this resource requires that you take some action in advance.

First and foremost, register your purchase with the hotline group. Most companies will want to know the serial number (from the product disk, etc.) and the version number, and may ask that you designate one person in your organization as the contact. They will also want to have your mailing address. The advantage of all of this to you is that if there is a newsletter or new products/upgrades mailing list, you'll now be on it.

More and more, manufacturers are beginning to offer **subscription support services**. If you've done your homework, you'll be in a good position to evaluate the cost against the benefits of such services. Again, if you're going to rely on their support, take the time to investigate and get to know them in advance. You may want to explore the advantages of becoming a beta site, testing new versions before they are released. Exercise caution, however; while you may get free upgrades this way, you also get to be the one to discover new bugs.

The above suggestions are just that: suggestions. They won't do you much good if you don't take the time to explore them. When The Day arrives, and your computer is down or otherwise erratic, it's too late to think about self-support or to do advance planning and/or preparation. Tempers will be frayed, time will be short and tension high. The difference between a stressful experience and a manageable one is entirely up to you. And remember, the job you save just might be your own. ■

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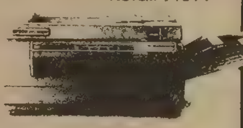
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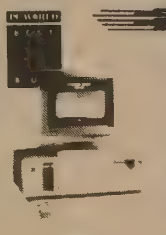
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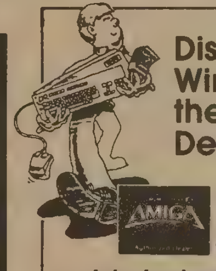
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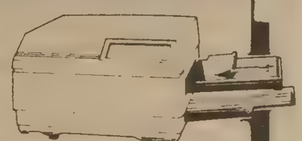
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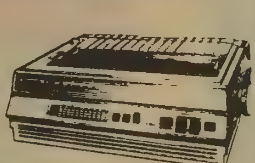
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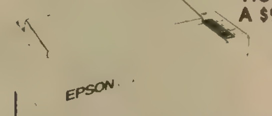
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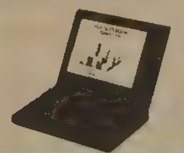
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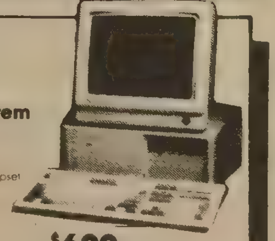
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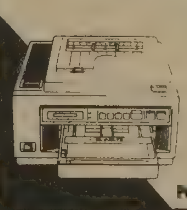
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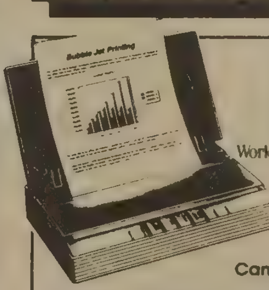

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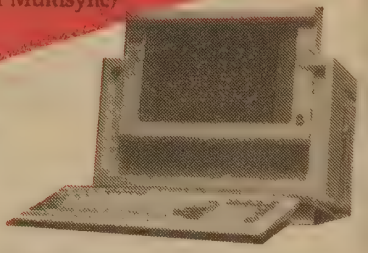

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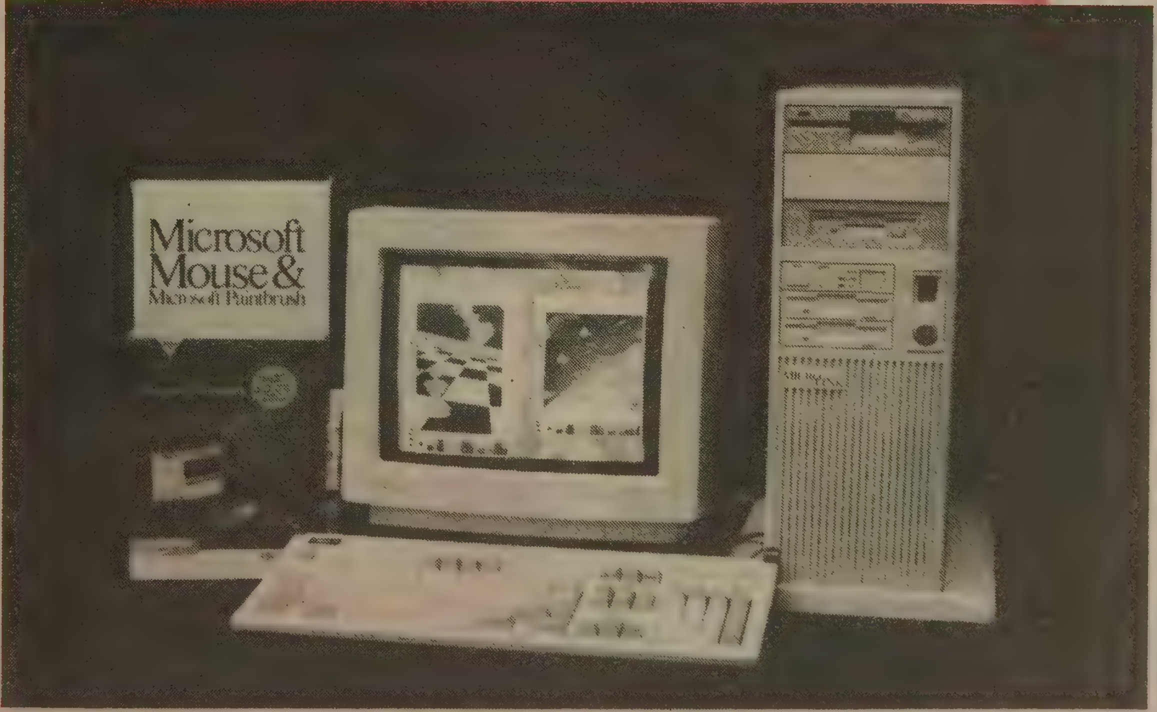

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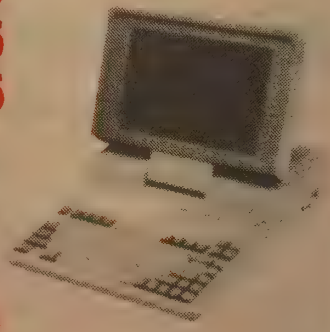

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1MB Ram Card for ProSpeed 286	595
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Network Monitors

Tools For Evaluating Your LAN's Performance

BY WAYNE A. YACCO

Copyright ' 1990 by Wayne A. Yacco. All rights reserved. An editor, writer, and consultant specializing in microcomputers and their business applications, Wayne Yacco writes articles, columns, and reviews for many trade and business publications. He can be reached at Box 269, Burbank, CA 91503.

LOCAL AREA NETWORKS

Network monitors and analyzers are indispensable tools for installing and maintaining networks. They compile statistics, keep audit trails, test hardware, examine packet contents, translate codes, and generate reports. With them you can follow traffic patterns, study work loads, examine and trace transmission errors, and find open or short circuits in the physical network.

Their ability to resolve faults also makes network monitors ideal for developing network-based products such as electronic-mail servers. You can really see what's happening inside the wires. Also, deplorably, they may be required for detecting intrusion attempts or tracing security violations.

If network topologies were static, monitors would be required for their applications in problem solving alone. However, networks are dynamic. They change with changing workloads—and they grow. Therefore, monitors and analyzers are also essential for performance tuning and planning the orderly growth of networks.

The most powerful members of this category are relatively expensive hardware-based tools. Fortunately, there are some less expensive software solutions which are more easily within the reach of smaller installations. They range from approximately $300 to $2,000, a cost equivalent to a few hours of a consultant's time.

PC NODES

Right on the cusp, between hardware and software products, is Watchdog Network Monitor from Network General. It is essentially a software product that runs on a PC, but includes an adapter with connectors for both thick and thin Ethernet. This allows the monitor to work concurrently with another Ethernet adapter. A second adapter is required to support a network operating system for two reasons. The Watchdog's own adapter does not include a network BIOS—it is a passive monitor—and it is dedicated to gathering data.

Watchdog can observe and record just about anything happening on a network segment. Notice the word "segment." Watchdog can track activity at any node on a network so long as it is not separated from it by a bridge or router (products which connect similar or dissimilar networks). That is, nodes on a single "segment" of an internet.

Furthermore, most of these monitors are not limited to a single network protocol. Watchdog tracks packets (a message bundle of data, network information, and error-correction code) from any network that runs on Ethernet. Packet types can be IPX/SPX (Novell), IP (TCP), XNS, AARP (AppleTalk), XNS or any other. They can originate from a PC, a Mac, or a workstation.

Watchdog produces statistics on error frequency, frame size, and station, network, and protocol usage. Usage can be reported as either absolute (a percentage of available network capacity) or relative (a percentage of current activity). The adapter's Intel 82586 LAN Coprocessor monitors individual stations or the entire network.

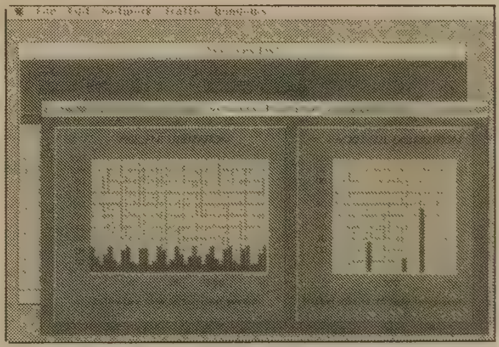
Network parameters include network idle time, percentage of network utilization, number of error frames, and unknown stations. Station parameters include bandwidth utilization, number of error frames, station idle time, and unresponsive stations.

OTHER PHYSICAL LAYERS

Monitors are available for other networks besides Ethernet.

Brightworks offers ARCmonitor+ for ARCnet in addition to an Emonitor+ program for Ethernet. Both are very low cost but also limited. They are designed to work only on single-server LANs, and only with specific cards. Sixteen-bit boards are not supported. A copy of CO/SESSION (which will be covered here next month) is included with each product. It allows the software to be run from a remote location via modem.

> **Networks are dynamic. They change with changing workloads—and they grow. Monitors and analyzers are essential for performance tuning and planning the orderly growth of networks.**



Watchdog can observe and record the activities of any network node.

ARCmonitor+ produces histograms for bandwidth and packets per second. Message activity can also be displayed in a list by node, and node information can be displayed along with a crude node map. The product also includes routines to test network controllers and cable connection between the node and its server. The current version is incompatible with—and a hazard to—NetWare 386.

Emonitor+ does not produce any character graphics, so there are no histograms. However, the program does provide network data capacity, bandwidth usage, and an information-transfer view of header statistics (source, status register, length, error status). Emonitor cannot differentiate packet types. Supported boards are limited to 3COM Etherlink, 3COM 501C, Micom 5210, Micom

RESOURCES:

Watchdog: $1995
Network General Corp.
4200 Bohannon Dr.
Menlo Park, CA 94025
(415)688-2700

Emonitor+: $295
ARCmonitor+: $295
Brightwork Development, Inc.
766 Shrewsbury Ave.
Jerral Center West
Tinton Falls, NJ 07724
(800)552-9876
(201)530-0440

PhoneNET Manager's Pack: $995
Farallon Computing, Inc.
2000 Powell St., Suite 600
Emeryville, CA 94608
(415)596-9100

NetMinder Ethernet: $495
Neon Software, Inc.
1009 Oak Hill Rd., Suite 203
Lafayette, CA 94549
(415)283-9771

5010, Novell NE1000, Western Digital 8003E. It also tests cable from node to server but does not test adapters.

MACINTOSH NODES

Similar programs are also available for the Macintosh. By year end, Farallon is expected to begin shipping its network-manager's toolkit: PhoneNET Manager's Pack. These utilities run under either EtherTalk or AppleTalk and some (NetAtlas and CheckNet) even support TokenTalk.

Manager's Pack contains several programs including the following major components:

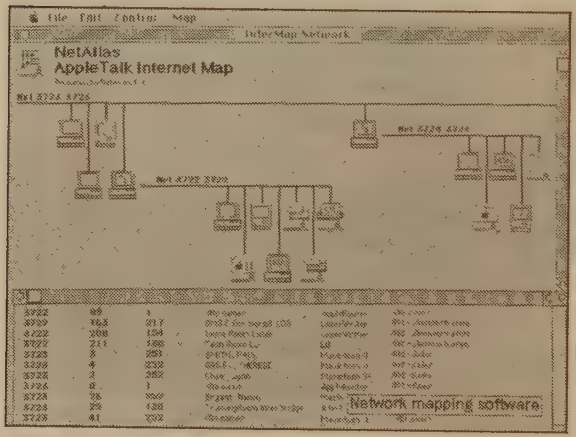
TrafficWatch II analyzes traffic patterns and error rates. It has its own reporting routines, but also includes substantial macros that work with Microsoft Excel. The macros allow data to be used in calculations and then output, using all of Excel's formatting power.

NetAtlas automatically maps the network's logical organization of file servers, mail servers, workstations, routers, and other entities.

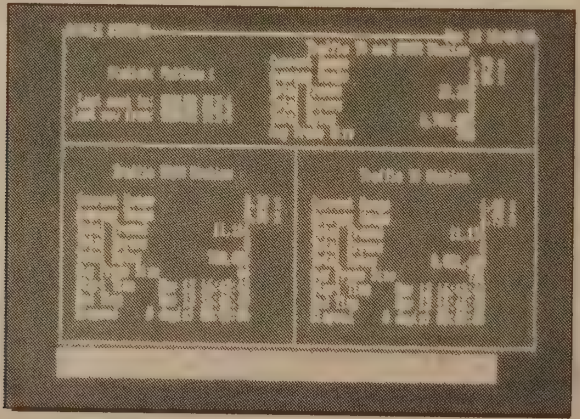
CheckNet searches and reports on all active devices.

NewStats provides continuous graphic monitoring of network traffic and error rates.

StarCommand monitors and controls Farallon's twisted-pair Ethernet StarController.



Farallon's PhoneNET Manager's Pack provides a variety of tools for checking and optimizing performance.



When a network begins to reach the limits of its capacity, or when performance degrades to an unacceptable level for certain tasks, traffic can be analyzed. The analysis will show which users frequently access certain heavily used resources, perhaps a database, and which users generate the most traffic.

Two copies of **Timbuktu 3.1** will provide screen-sharing and file transfer for control of servers and remote user support.

The Farallon bundle will work with any protocol, but it is intended to offer more thorough support for Apple protocols. It will be possible to analyze Apple protocols by packet type while others, such as TCP/IP, will be combined into generic groups. Documentation is scheduled to include video tapes on system-planning and installation techniques.

Neon Software's NetMinder Ethernet also runs on the Macintosh, but has significantly different capabilities from Farallon's offering or the PC-based monitors. In addition to analyzing bandwidth utilization, NetMinder is much more focused on detail. It builds a database of entire packets. You can then search network traffic for any string, such as a data pattern or error packet. Up to five filters can be employed to analyze messages by source/destination addresses or protocol type.

The manual includes format and code information for a variety of packet types and vendors. However, hexadecimal transmissions are automatically converted for several supported packet types including XNS, TCP/IP, UDP/IP, ICMP, ARP, ATP, RTMP, NBP, AARP, and MacIP. Packets from unsupported protocols are displayed in hexadecimal.

This September, support will be expanded to include several others (including two routers): IPX/SPX, DECNet phase IV, DECMOP, Proteon, and Bridge Communications.

Although this software does not include a dedicated adapter like Watchdog, other network tasks cannot be run once NetMinder has been started unless a second network adapter, such as an AppleTalk controller, is installed. It is possible to run other applications which do not require network resources. The program also includes a routine for testing Ethernet boards.

NETWORK EVOLUTION

These products all provide detailed information that can be used to find the source of network errors. They also report usage. That information can be used to make management decisions for planning and growth without guesswork.

For example, when a network begins to reach the limits of its capacity, or when performance degrades to an unacceptable level for certain tasks, traffic can be analyzed. The analysis will show which users frequently access certain heavily used resources, perhaps a database, and which users generate the most traffic.

Users and resources that have a high volume of traffic among them can be split off into a separate network segment and joined to the remainder of the original segment by a router. A few less frequent, low-volume transactions will have to pass across the router with some degradation. However, each network will have increased capacity, and the majority of applications will have improved performance.

True, you could do a study instead—with questionnaires, interviews, best guesses, and other inaccuracies. The cost of the survey alone could outweigh any of the products in this column. The cost of a mistake could add up to unnecessary servers, routers, software licenses... Well, you get the idea.

Next month: more on installation and configuration as this series concludes with a look at remote-control products. ■

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MicroVax III/Q-Bus

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UNIBUS

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RAM DRIVE 5.25″ 24 MB	$9150
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Panasonic KX—P4450 11PPM HP Emulation	1485
Panasonic KX-P4420 8PPM	1245
Canon LBP8III, 8PPM 1 MB	1750
Canon LBP4, 4PPM 1 MB.	950
Fujitsu RX7100, 2BIN, 5PPM.	930
Fujitsu RX7100PS Appletalk, Postscript	2671

WE DELIVER • INSTALL • TRAIN ON ALL SYSTEMS

Using Variables

BY BENNETT FALK

UNIX

The day before yesterday, after the stock market took a dive and the X Windows applications I'd downloaded from USENET refused to compile, I began to think fondly of how variables are handled in the UNIX shells.

Variables make computers worth the trouble. If one thing could not stand for another, and if the value of a thing had to be known before it could be used or even named, programming would be truly hopeless drudgery. Using programs would be no better: the usefulness of any program would be limited to the constants hardcoded into it.

Shell programs of one sort or another have been the basic user interface for UNIX systems. There are three different shells in circulation, and none of them offers a particularly flashy user interface. However, they do contain the basic elements of any programming language, and programming with a UNIX shell is a relatively painless way to learn how to manipulate variables.

The UNIX shells allow variables to be created more or less *ex nihilo.* In the C shell, for example, the user calls a variable into existence simply by assigning a value to a name with the "set" command.

Defining Variables With "set"

In its simplest form, the set command requires only one argument, a variable name

```
set newt
```

creates a variable named newt, but assigns no value to it. The variable exists only for the current shell, and is invisible to other users. When the shell exits, its variables cease to exist.

The set command can also be used to assign a value to a variable:

```
set newt = frog
```

establishes a variable named "newt" whose value is the string "frog". There's no need to declare either the name of the variable or its datatype in advance. The set command creates the variable if it does not already exist and assigns a value to it. If the variable already existed, the new value replaces the old.

The shell distinguishes between the name of a variable and its value. To refer to the value of any variable, simply add a "$" prefix to the name of the variable.

To display the value of the variable newt, use the command "echo $newt" which will return the word "frog" in this example. Trying to print $newt before the variable has been set results in an error message: "newt: Undefined variable." It is possible to test whether or not a variable has been set with the expression "$?newt", which will be 1 if newt has been set and 0 if it has not.

The C shell basically treats the value of any variable as though it were a character string. Consequently, the command

```
set newt = "the quick brown fox"
```

has the intuitively satisfying result of setting the value of newt to "the quick brown fox". Using single quotation marks or parens would work just as well to group the words on the right side of the assignment. Things are a little less satisfying if nothing enforces this grouping:

```
set newt = the quick brown fox
```

is a legitimate command, but it sets newt to "the", the first word in the string and ignores the rest.

It is possible to assign the output of a command to a variable. If the output of "who" is

```
bennett tty02  Jul 25 23:42
root tty01 Jul 25 21:43
```

the command "set newt = `who`" stores the output of who in the variable newt. $newt then consists of

```
bennett tty02 Jul 25 23:42 root tty01 Jul 25 21:43
```

Naturally there is an upper limit on the size of the string that can be assigned to a variable. The exact limit will vary from system to system: the maximum for SCO UNIX System V seems to be 507 characters.

WORKING WITH PARTS OF A VARIABLE

The C shell offers some facilities for working with individual words in a variable. For example, "echo $#newt" displays the number of words in the current value of newt, and references to $newt can also be subscripted to isolate individual words in the variable. "echo $newt[1]" prints out the first word in newt's current value. Variable references can

FIG. 1

```
# !/bin/csh
# A crude version of "which" to display the full pathname for
# any command that can be executed from the current search path.

if ($#argv < 1) then
    echo "Usage: $0 command"
    exit(1)
endif

set count = $#path

while ($count > 0)
        if (-e $path[$count]/$1 ) then
                echo $path[$count]/$1
                break
        endif
        @ count = $count - 1
        if ($count == 0) then
       echo "$1 not in $path"
    endif
```

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Bennett Falk lives in the Bay Area, writes when he can, and hopes for the best. He works for Sybase, but the opinions and attitudes expressed here are his own.

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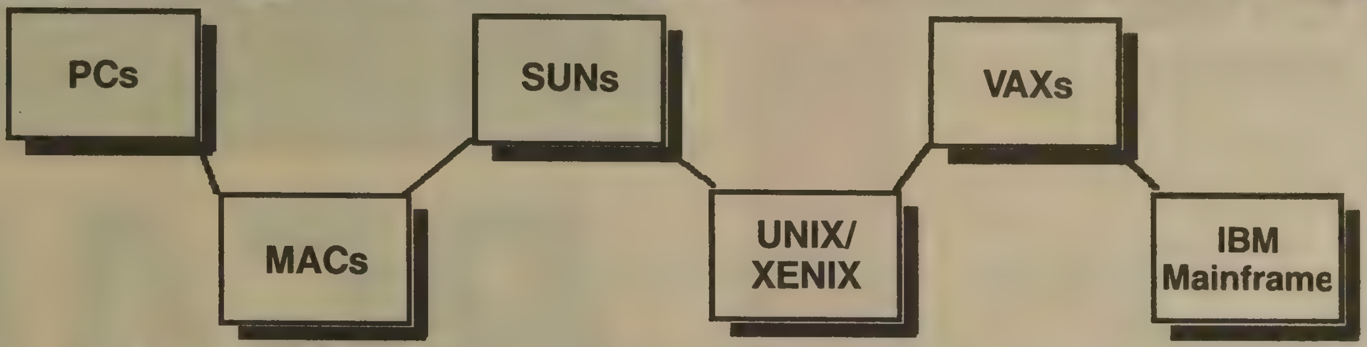

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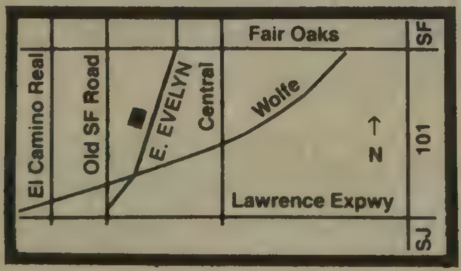

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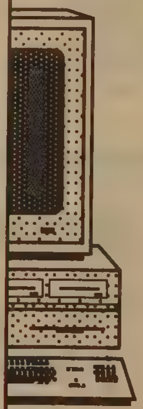

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also be nested, so

```
echo $newt[$#newt]
```

prints out the last word in the current value of newt.

Even though the implicit datatype of shell variables is character, it is possible to perform integer arithmetic on variables whose values are within range. The C shell uses "@" in place of "set" when arithmetic operations are to be performed on variables. The commands

```
set newt = 1
@ newt = $newt + 1
```

set newt to 1 and then increment newt to 2. There can also be multiple words in "numeric" variables:

```
set newt = (1 10 100)
@ sum = $newt[1] + $newt[2] + $newt[3]
```

The value of sum after these commands will be 111.

The "@" command can be used any time the right side of an assignment is a numeric expression.

Using "@" with things that can't be reduced to numeric expressions returns an "Expression syntax" error.

C SHELL AND "WHICH"

The C shell's ability to manipulate variables make it a reasonably powerful programming language. One example of this power is the "which" command that is bundled with Berkeley UNIX. "which" is used to display a full pathname for any command that can be found in the search path. It's useful for identifying which of several versions of a program is being executed. The "which" command is in fact just a shell script of 40 or so lines.

A vastly simplified version of "which" appears in Figure 1. The simplified version doesn't check for aliased commands or for directories whose names satisfy the search criteria, but it does function more or less like the which command included with Berkeley UNIX, and it illustrates how shell variables are used in practice.

There are resources for learning more about shell variables and how they can be used in shell programs. The manual entry for csh (the C shell) is a good starting point, but books like *The UNIX C Shell Field Guide* by Gail and Paul Anderson (Prentice Hall, 1986) and *UNIX Shell Programming* by Stephen Kochan and Patrick Wood (Hayden Book Co., 1985) do the job more thoroughly. ■

The variable exists only for the current shell, and is invisible to other users. When the shell exits, its variables cease to exist.

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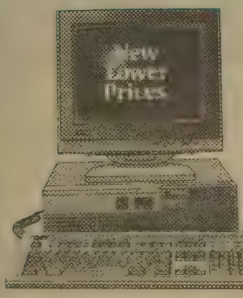

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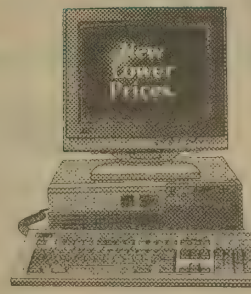

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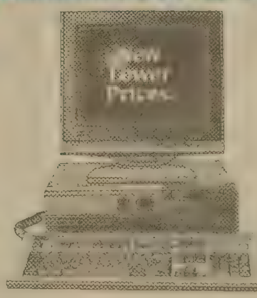

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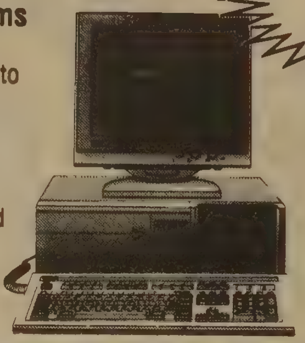

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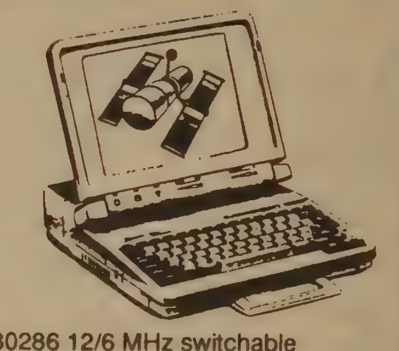

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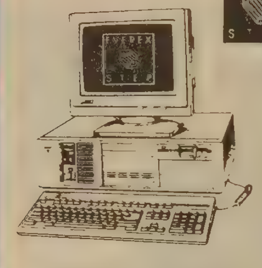

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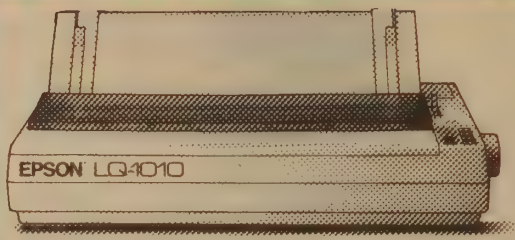

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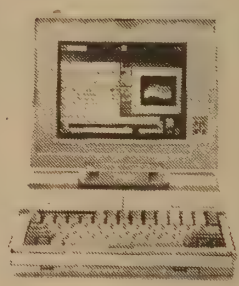

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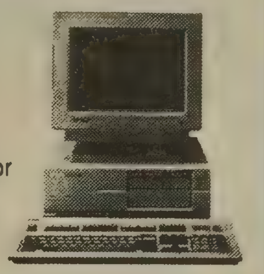

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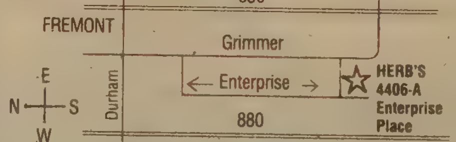

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SAFI QURESHEY:

> "Business users look for performance. They look at computers as a long-term investment. We felt that IBM and Compaq—although very good companies—had set up pricing that provided room for a company like AST to come out with competing systems."

computer and eventually, perhaps, the mighty mainframe itself.

In a recent interview at the company's Irvine headquarters, Quereshey and Yuen discussed AST's evolution, the challenges it faces, and its strategy for the future.

AST was once known only for highly reliable board products, particularly the 6-Pak. How did you come to make the transition to complete PC-compatible systems?

Safi Qureshey: The AT came out in August of '84; we entered the computer business in the Fall of '86.

By that time, most of the issues about our industry were very well defined: the role of IBM, the role of standards, compatibility. We knew 1) What were the factors that made companies like Compaq and a few others successful, 2) What were the factors that took care of companies like Eagle, or Columbia Data, or Osborne. We were much better prepared.

Still, it's a tougher business now. How were you able to compete?

As many companies have come and gone out of the business, there's an overall consolidation. But AST is completing ten years of business; we're really not a startup from that point of view. We were successful in a very competitive add-on business. Everybody could design a card in their garage, so we were used to competition. We were emphasizing quality, versus emphasizing features, to the business customers. Our focus was always business users of PCs—not home users.

What do business users want that makes them different from home users?

They look for performance. They look at computers as a long-term investment. Performance was there, but price was becoming more important. We felt that IBM and Compaq—although very good companies—had set

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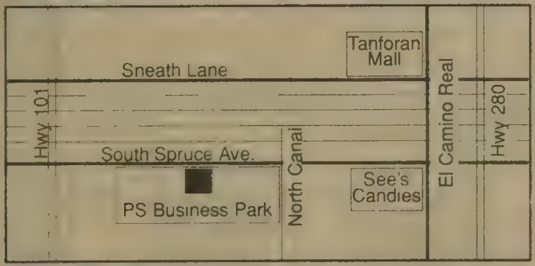

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up pricing that provided room for a company like AST to come out [with competing systems]. The key thing we did, besides coming out with a computer with the right price and the right performance, was to add some new features to the computer.

Didn't the de facto IBM standard stand in your way?

We felt that standards are important, but AST would be able to innovate within the standard.

The passive backplane?

We don't have a passive backplane. We have an active backplane, but we also have a processor plug-in card. The point is to put all of the things that do not change from model to model on the backplane. The standards that have developed in this industry of graphics and desktop systems and serial and parallel ports, the BIOS, they're all on the system board where we are applying very large-scale integration.

Intel comes out every six months with a new processor, a new speed, a new cache—those are on the plug-in card. Each time Intel has a new processor, we just design a new card. The box is already FCC approved, UL approved, CSA approved.

What about memory?

Memory is not on the backplane. Part of the memory is on the processor card and, if the customer needs more memory, on a plug-in memory card.

What are some of the special features you've incorporated into the product line?

Some of the things that we are building are an evolution that will take place over a period of time. One of them is called Common User Access, CUA, which will allow our entire product line to have a common look and feel based on IBM's System Application Architecture [SAA]. Things like that are part of our BIOS and part of our utilities.

Is that implemented only under OS/2?

No, under DOS also. What we're trying to do is give people...a family approach, because somebody may be buying our entry-level product today, but the same user may want to upgrade two years from now.

AST has also made a commitment to EISA, hasn't it?

Yes, we have an EISA product that is shipping.

We understand that the AT doesn't use direct memory access (DMA) for disk access, and that there's some room for getting disk I/O off of the processor. Is EISA going to allow you to make substantial improvements over the AT bus (ISA)?

I think the EISA extension advantage is truly coming in the controller area. We are offering EISA controllers; and network EISA controllers and communications controllers are just becoming available.

Why is AST doing EISA?

The reason we push the EISA standard—speaking for the industry—is MCA [IBM's competing Micro Channel Architecture bus]. That's why there is so much third-party activity to design some of those specialized products. We may sell very few units, but they are available to our customers. So, we are becoming very much a systems company.

So the idea of offering EISA was to avoid domination by IBM and to increase the breadth of the product line for customers who want it. Did you ever cross-license MCA?

Actually we are probably the second company to have a cross license from IBM.

So you're prepared to go into MCA at the point where you see the market demanding it?

The big difference between MCA and EISA—forget the technical aspects; we can say ours runs faster and they can say something else—the big difference from a customer's point of view is that one is open and the other one's closed. That's the only difference.

AST recently introduced a hybrid machine with both IBM and NEC 9800 architecture for sale in Japan.

Thomas Yuen: The NEC standard in Japan is really a software standard. It's really not a hard-

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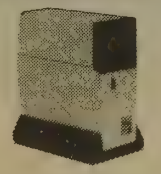

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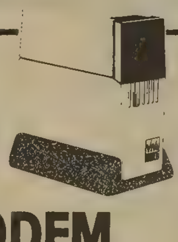

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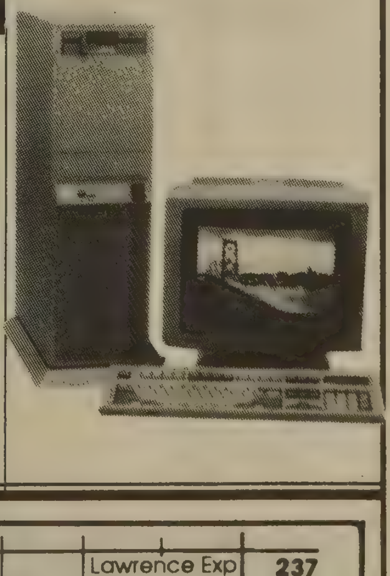

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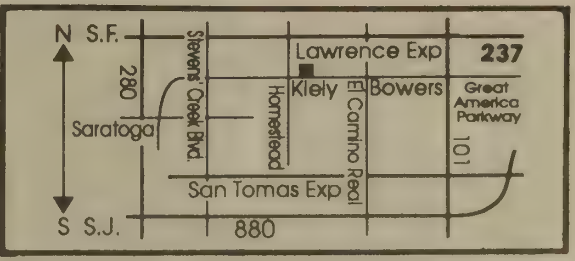

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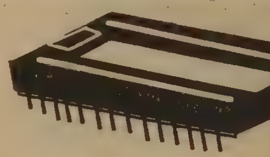

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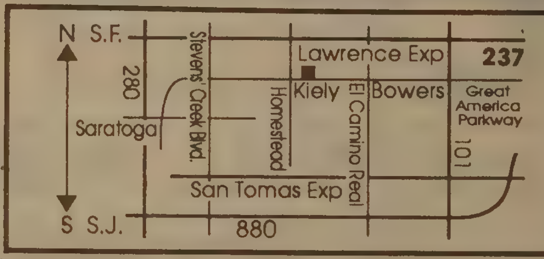

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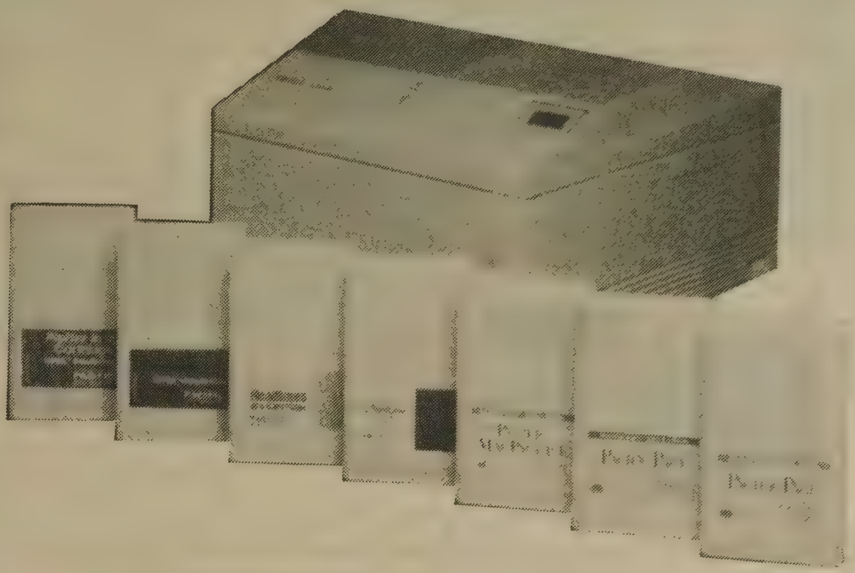

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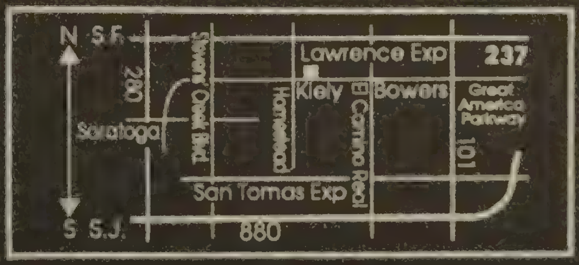

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THOMAS YUEN:

> **"The reason we're in Japan is multifold. We already have an established channel in Japan selling our current US products to multinationals in the Tokyo area. That group also acted as a liaison group to introduce us to software vendors."**

ware standard. Even along the NEC offerings, up and down the scales from 286 to 386 and beyond, there's no common hardware specification.

Yet NEC dominates the Japanese personal computer market?

Yuen: NEC has 75% of the market. They are the de facto standard.

You place a lot of stress on the word "de facto."

Yuen: There's a lot of reality in what we can say about trade barriers. To me, the fact that we are stressing the word "de facto" is that it is not a standard; it is proprietary. And, they [NEC] have taken a very proprietary approach to the industry.

Does that mean it's not using a DOS-based operating system?

Yuen: It's a DOS-based system, but it is modified. It is what they call "Japanized." Actually, in this case it's NEC-corrupted versions, so that you cannot just go and buy any DOS and software. It will not communicate with any of the existing programs.

Is that because of the hardware?

Yuen: Everything is different. The keyboard is Japanized. The command sets are all in Kanji. You turn on the machine and it just runs in Japanese. If you're not Japanese you can't even read it.

How does AST expect to enter a market that many US companies find impenetrable?

Yuen: A lot of people ask us that question. They say, "How big is the risk? Are you going to be able to open the Japan market?" The questions are very simple for us. We've been in Japan for two years now before we launched a product.

The reason we're in Japan is multifold. We already have an established channel in Japan selling our current US products to multinationals in the Tokyo area. That group

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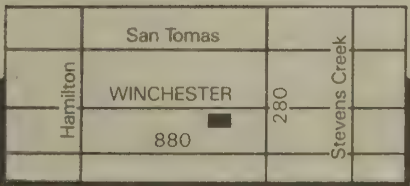

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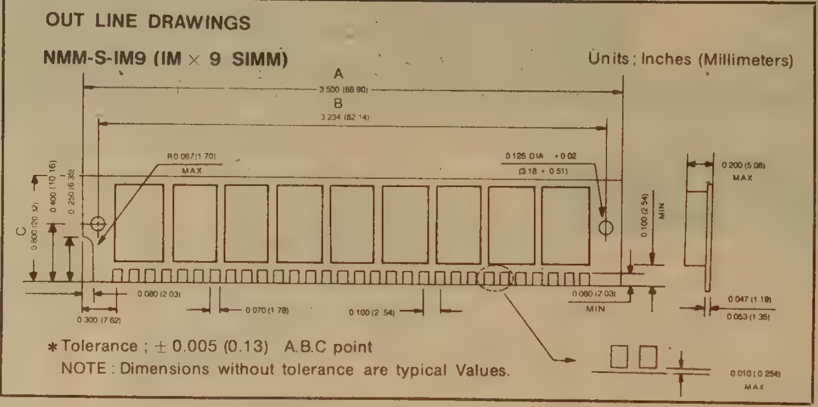

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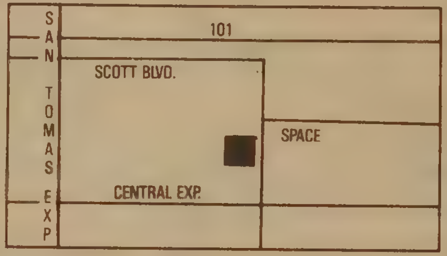

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also acted as a liaison group to introduce us to software vendors.

Is that a Japanese channel?

Yuen: No. It's our own.

A direct-sales effort?

Yuen: Yes. So we have existing dealers and distributors in Japan. If we elect to go slow, we can exploit those relationships.

The problem that everyone always cites with Japan is the chain of distribution, that it's all connected in an old-boy network.

Yuen: In the US we have organized crime. In Japan we have organized business. It's a reality. So, what we have done is we have gone the other way around. In Tokyo there are still a lot of multinationals that are not Japanese controlled. So, we've been kind of going through the back door to open up dealers and distributors that have overlapped business. We don't expect to take the bold, traditional American stance.

Then you're not going through the standard retail channels in Japan?

Yuen: We do, but we do it discreetly. What I mean is, the dealers that are selling our product, the American version, they cannot just make a living selling American product. So they are the overlapped group. You see, in everything there is not just a black-and-white spectrum. There's a grey area.

So there are Japanese dealers you can work with?

Yuen: Especially nowadays. Look at the Japanese influence. Any significant Japanese big company that does not have overseas operations is probably not a very savvy company. So, every Japanese company has some kind of corresponding subsidiaries or something.

Just think about Mitsubishi: How many industries are they in? You can sell to Mitsubishi Auto; you can sell to Mitsubishi Bank; you can sell to anything Mitsubishi—shipping, freight.... If we can just crack one account like that, then you say, "How many of their subsidiaries are overseas?" Probably hundreds, if not thousands, of employees are in that one account.

Why would they choose AST's dual standard over a straight NEC machine?

Yuen: Japan is so real estate-sensitive they cannot afford to have a desk big enough to hold two computers. If I'm a person in charge of international business, I need to run something for day-to-day communication in my office with Japanese guys. But the next thing I would have to do is to fax. I'm not going to waste the desk space for two computers. Why are laptop computers so prevalent in Japan? It's because they're constrained by real estate. Our approach might not be selling just to the real-Japanese Japanese market. Why would they benefit from a dual SX? I'm looking only at the Tokyo area, the Yokohama area—a lot of foreign-affiliated headquarters.

Will your penetration of the Japanese market have any impact here?

Yuen: I have Reuters wanting to buy the dual SX in the US for their Japanese operation. We have the Japanese Grain Exchange wanting to buy the product. We have a Japanese association in Chicago that has 800 affiliate members—these are small-business men in the Chicago area—wanting to buy the product. We have a couple of beta units scheduled to go in to Nissan and Toyota here in the Irvine area. Some government agencies want them. I have interest in this machine from Australia, UK, France, Germany, Brazil also.

How is AST doing in the Far East?

Yuen: We are the number-one market-share holder, ahead of IBM and Compaq combined, in China and Hong Kong. We do close to ten million dollars a month in those two markets alone.

You have a factory in Hong Kong and focus a lot of attention on that market and China. How long has it taken you to become established there?

Yuen: It takes a long time. It took us five years to slowly get

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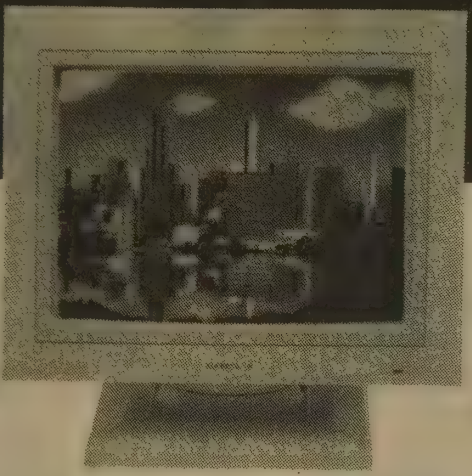

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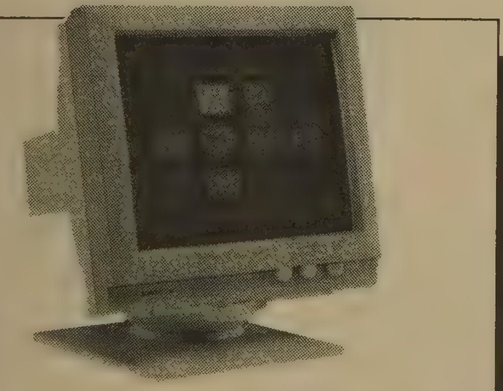

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Scanning frequency: H: 18.432KHz (MGA mode)
H: 15.75KHz (CGA mode)
V: 44-74Hz
Display area: H: 233 +/- 3mm, V: 173 +/- 3mm
Bandwidth: 20MHz (-3dB)
Resolution: 720 dots x 350 lines
Operator control: Power on/off, contrast, brightness (external) sub-brightness, focus (external)

Display colors: monochrome (amber: P39, paper white: H8, Greenish yellow: H47)
Display format: 80 ch x 25 rows
Power source: 110/220 VAC, 60/50 Hz
Power consumption: 30W max
Ergonomics: tilt & swivel base
Tilting range: - 5 degrees to +15 degrees
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the sales up to where we are. The beginning years are very tough, very lean years. It's just like Japan. We hardly expected to do any business in Japan two years ago when we established the subsidiary. Now we're seeing benefits.

The picture you paint of a long-term commitment sounds suspiciously like the Japanese philosophy credited for much of their success in penetrating international markets.

Yuen: The infrastructure we set up around the world too, I mean in the general sense, is why we differentiate ourselves from the other clones. We're not looking for a quick kill.

But some of your competitors are?

Yuen: You can go down the street and look at another company with three letters that starts with "A" also. They've got five people in tech support. They project a bigger-than-life image. How can they run a business? We have 120 in tech support. I think the infrastructure is where we differentiate.

What does that infrastructure consist of?

Yuen: This building alone represents something like a $30 million investment from the company. To create stability, we have our R&D people and a million dollars worth of R&D equipment. "How can you bring timely product to the customer?" is what we continue to strive to get at.

How much do you spend on research?

Qureshey: I think we're spending in the 4%-of-sales range, same as Compaq. But really the key difference is that Compaq is many times bigger. We are using these kinds of things to be innovative in engineering.

Yuen: Aside from these administrative buildings, we have another $20 or $30 million invested in our Fountain Valley factory.

Is all of that atypical of your competitors?

Yuen: Many of the clones, what do they do? They buy boards from a motherboard factory in San Francisco, some XYZDTK boards from Taiwan, slap it together today. Tomorrow it will be another version. That's just not acceptable for the business user. Some consumers can tolerate that. From our point of view, it's important to deliver a consistent product.

But those vendors aren't your real competitors, are they? Wouldn't Everex be a better example?

Yuen: I think Everex's followings are usually attracted to them because of a few benchmark results. I doubt quality was ever the primary reason people ever bought Everex. That is still our guiding fundamental principle in running our business: We've got

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to give them high quality, high support. I think the return business is the most valuable.

AST has made at least two significant contributions to PC-compatible technology for which it does not seem to have received much recognition. Recently, your Smart Slot has had a substantial influence on EISA. Earlier, you had developed enhanced memory-management concepts for EEMS that your competitors first denounced as incompatible with their own LIM standard and then shamelessly adopted for EMS 4.0. You've been recognized by inclusion in the latest extended memory standard (XMS), but why hasn't AST taken more credit for its innovations?

Qureshey: Like any other industry, there is a lot of background negotiation, politics, that were going into this thing. We have felt that, if we can deliver something good to the customer—we can implement it in hardware, software, whatever—we should try to do it. If we are offering something new which has got some features, but puts tremendous burden on the customer, then we would think about it.

EEMS was that very obvious memory-management enhancement that, to us, was just so obvious that we said, "Implementing it, the customer is not hurt at all." Backwards compatibility was always featured.

That was the point your competitors always emphasized—that EEMS was not compatible—but EMS 4.0 seems to prove that it was by including the same basic changes?

Qureshey: Pretty soon you will see some ads coming out, because our guys in the board business are becoming a little bit more aggressive.

They went out and looked at our Rampage and Intel's AboveBoard, and they have found situations where the Intel AboveBoard hangs up. With, currently, some very popular software.

So they asked me. I said, "Fine, if that truly is the case, you should not be shy."

Half a million or more boards that we have shipped can do all these things. And even the latest Intel board cannot do something we have been doing for five years.

Where is AST headed now?

Qureshey: Our industry is the industry of standards. This is putting tremendous pressure on minicomputer companies and mainframes. They have refused to recognize that.

But within these standards we want to innovate. We are really saying that you can do a lot of innovation, but still do what the customers like.

You've managed to do that with EEMS and Smart Slot, but not many companies have.

Continued on page 204

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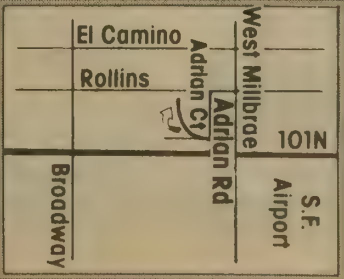

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If your new purchase isn't exactly what you need you can bring it back for a refund, or trade it in for a television, a stereo, or a fax machine! This is Uncle Ralph's, and we must have something you want!

ALL SYSTEMS READY NOW!!!

Immediate Availability on Advertised Computer Packages

Uncle Ralph's has complete computer systems ready to go. Special order, custom configurations, and modifications are also available.

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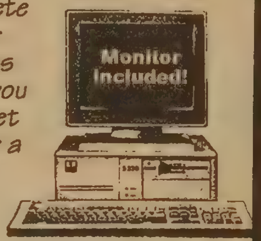
PANASONIC-XT COMPLETE WITH MONITOR

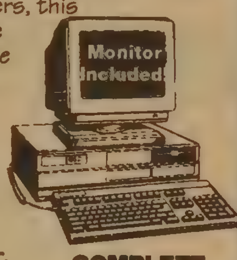


This complete computer system has everything you need to get started for a super low price.

Includes 20 MB hard drive, monitor, DOS 3.3, and 640k RAM. Backed by a 1 year parts and labor warranty.

COMPLETE SYSTEM *AVAILABLE NOW* **$799** **$40/Month**

DTK 286 COMPUTER COMPLETE WITH 40 MB HARD DRIVE AND MONITOR



From one of the world's largest computer makers, this IBM compatible comes complete with serial and parallel ports, 1.2MB floppy drive, 1 MB RAM, 40 mb hard drive, and hi-res flat screen monitor. Includes 1 year warranty, and Uncle Ralph's outstanding commitment to customer satisfaction.

COMPLETE SYSTEM *READY TO GO* **$999** **$50/Month**

ALR POWERFLEX 286

EASILY UPGRADES TO 386SX

Monitor Included!

The highly reviewed ALR powerflex computer can grow with you. Right now it's one of the best 286's on the market. Later, when you're needs expand just plug in a card and it becomes a 386 SX. System includes 40MB hard drive and monitor.

COMPLETE SYSTEM *Take It Home With You* **$1,299** **$65/Month**

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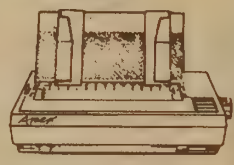
EPSON'S COMPACT NEAR LETTER QUALITY PRINTER



Excellent "near letter quality" print, and a fast 180 CPS in the draft mode make this sleek Epson a great value. Includes tractor feed and 1 year warranty!

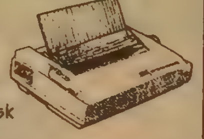
EPSON **$149**

PANASONIC 24 PIN LETTER QUALITY PRINTER

Here's a great buy on the most popular 24 pin printer made. Excellent "letter quality" print, automatic tractor feed with paper parking and self loading.
2 Year Warranty!

Panasonic **$299** **$15/Month**

BROTHER'S TOP OF THE LINE, HI-SPEED LETTER QUALITY PRINTER



Our best dot matrix printer produces text and graphics that are good enough for desk top publishers. It's very fast (360cps) easy to use, and perfect for high output users.

brother **$499** **$25/Month**

COLOR UPGRADE AVAILABLE $75

BROTHER'S 270 CPS, WIDE CARRIAGE PRINTER

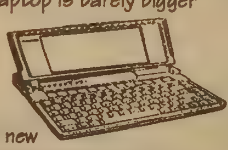
EXTRA STEADY TRACTOR FEED

If you need a printer with a beefy tractor feed that is practicaly "jam-proof", you'll love this Brother. It's fast, relatively quiet, and very easy to use. Comes with excellent letter quality & near letter quality fonts.

brother **$699** **$35/Month**

LAPTOP COMPUTERS

PANASONIC'S WONDERFUL NOTEBOOK



This tiny laptop is barely bigger than a notebook, but it's fast, fun, and has a new easy to read backlit screen. Includes 640k/RAM, AC adaptor and battery charger, and DOS.

Panasonic **$699** **$35/Month**

MITSUBISHI PORTABLE 286 COMPUTER, 20 MB HARD DRIVE, EGA SCREEN & MODEM

This complete package includes Mitsubishi's excellent 286 laptop computer, modem, carrying case, Microsoft Works, MS-DOS, and a terrific screen. AC only.

MITSUBISHI **$1,869** **$93/Month**

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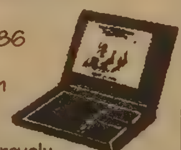
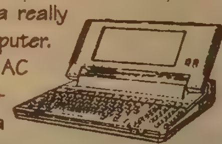


This is the tiny 286 computer that everyone has been waiting for. Includes 20 MB hard drive, and a revolutionary new triple super-twist backlit screen. It's brand new, and delivery is scheduled for any day now, but call first to make sure that it's here because you'll want to see it before you buy any other notebook.

INTRODUCTORY SPECIAL

TANDON 386SX LAPTOP



This is a really neat computer. Runs on AC or batteries, has a terrific new VGA screen that refreshes itself in half the normal time. Includes 40MB hard drive and DOS 3.31.

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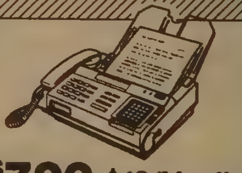

This machine has all the features you want but at a price you will love. Features, document feeder, paper cutter, half tones, 13 second transmition speed, and an error correction system.

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UNCLE RALPH'S/MYLEX 386SX WITH 45 MB HARD DRIVE, 3.5" & 5.25" FLOPPY DRIVES, 2 MB RAM & VGA COLOR MONITOR

You'll love this computer. It has a Mylex/USA motherboard so it's dependable and very fast. It comes with a great keyboard, superbly crafted "accu-fit" case, 3.5" and 5.25" floppy drives. Complete systems includes parallel & serial ports plus Uncle Ralph's support & service.

COMPLETE SYSTEM ***AVAILABLE TODAY!***

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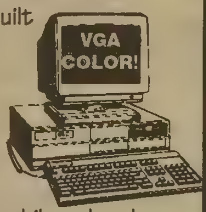
$90/Month

UNCLE RALPH'S/MYLEX 386/20, STATIC RAM CACHE, 68 MB HARD DRIVE, 4 MB RAM, 3.5" AND 5.25" FLOPPY DRIVES &VGA COLOR MONITOR



A lot of computer, built exclusively with top brand components. The Mylex/USA motherboard has 8 layers & a 64K static RAM cache. We use Teac floppy drives and a fast Toshiba hard drive. The complete system includes our top of the line keyboard and case, game, parallel, and two serial ports. 1 year Warranty

COMPLETE SYSTEM ***Take It Home TODAY***

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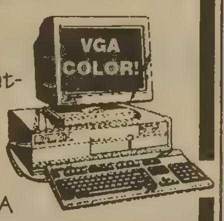
U.R./MYLEX 25 MHz 386 with STATIC RAM CACHE, 100MB HARD DRIVE, 4MB RAM, 1.44 & 1.2MB FLOPPY DRIVES & VGA MONITOR



Scores 20% faster than most other 386/25 MHz computers & built with the best components available. The complete system includes a Mylex/USA motherboard, 8 layers & 64K static ram cache, terrific "accutouch" keyboard & elegant "accu-fit" case, plus game, parallel & 2 serial ports, VGA card & color monitor.

COMPLETE SYSTEM ***AVAILABLE TODAY***

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$140/Month

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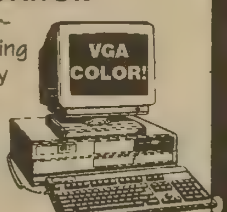

The OmniTel motherboard has been making some big waves lately and we've packaged it with other excellent components to create a high performace system. Complete system includes Conner hard drive, Viewperfect monitor, 512K VGA card, parallel, game, and 2 serial ports, and your choice of excellent keyboards.

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FUJITSU'S BUDGET LASER PRINTER IS A REAL FIND !

This Fujitsu printer operates flawlessly, delivers great looking output, and loads 4 different size paper and envelopes without any extra accessories or upgrades. It's quiet, fast to the first page, and great for text and graphics.

FUJITSU

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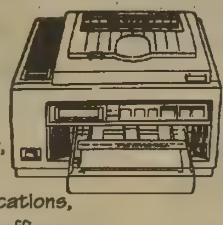
PANASONIC 8 PAGE/MINUTE LASER PRINTER

Panasonic

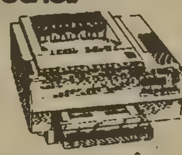


True laser output, 11 resident fonts, HP laserjet II emulation, 250 page paper tray, 512k RAM. Designed for high output applications, and perfect for busy offices.

$799 **(After $50 rebate)**

BROTHER'S TOP RATED LASER PRINTER

brother



Here's the terrific laser printer that's getting great reviews. It runs on the reliable Canon engine, has 8 emulations including HP Laserjet II, 44 resident fonts, memory for full page graphics & super sharp image.

Top Rated by *PC Mag*
Top Rated by *PC Week*
Top Rated by *PC World*

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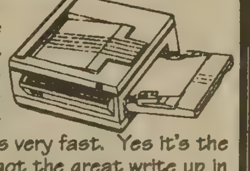
SUPER-FAST EVEREX/ABATON POSTSCRIPT LASER PRINTER



This new introduction from Everex may be the best Postscript buy to date. Scales text fonts and graphics to any size from 4 to 99 points, and it's very fast. Yes it's the same one that just got the great write up in *Computer Currents.*

EVEREX

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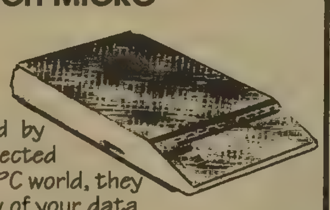

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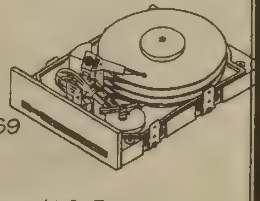

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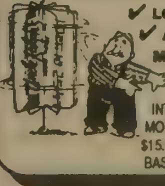

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TELECOMMUNICATION IDEAS

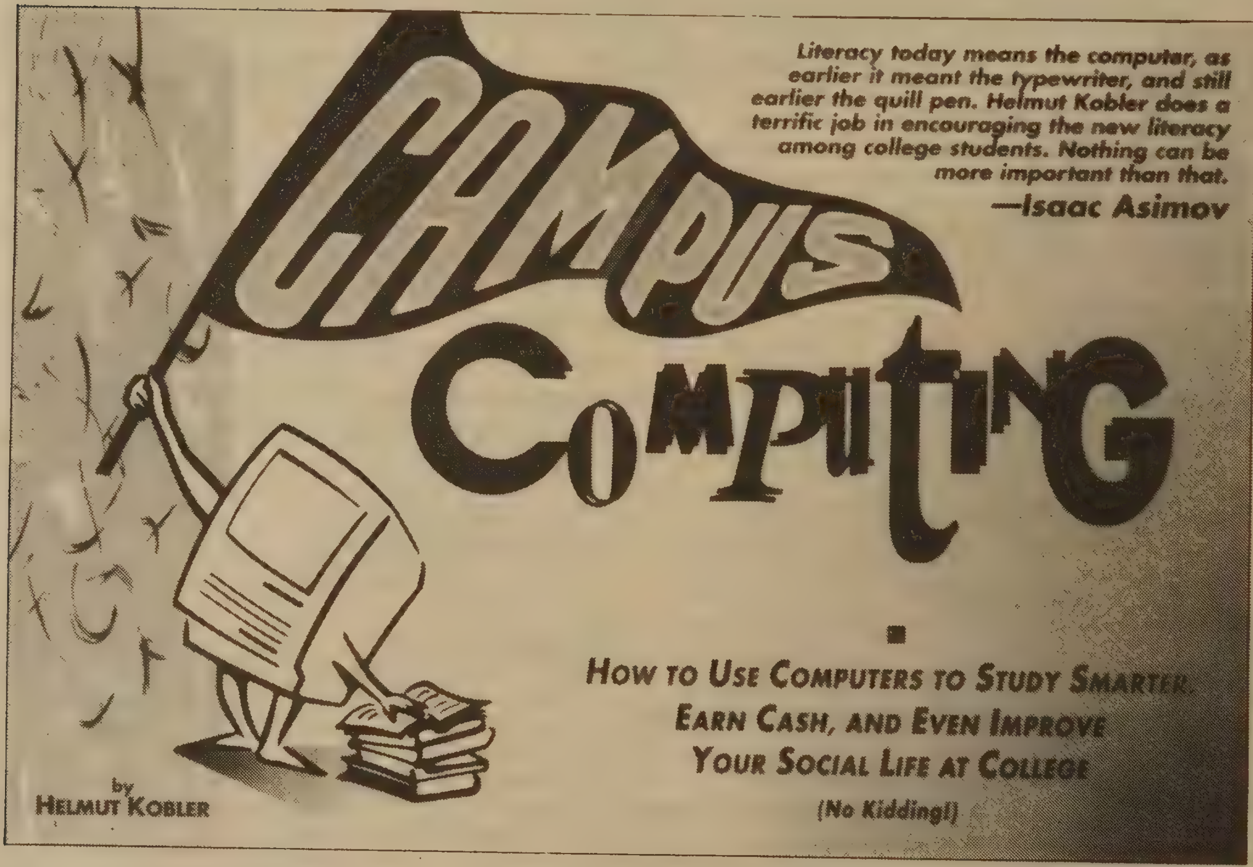
Online On Campus:

Usenet And How To Use It

BY HELMUT KOBLER

In a classical Greek democracy, a whole city would converge to debate its issues in one place; today, you'll find a high-tech equivalent in Usenet, a huge, worldwide electronic discussion forum with a lot to offer students. You can chat about a wide variety of academic disciplines, from physics to Russian culture to poetry, or everyday topics like boating, travel and the Grateful Dead. Either way, if you're the type of student who can't stay awake in a droning lecture, but loves the give and take of a discussion, Usenet can be a thrill.

Through Usenet—which is a feature carried by networks of UNIX mainframe and minicomputers on campus—thousands of computer users exchange messages, as though they were exchanging electronic mail. But unlike email, this is a system where everyone is free to read and respond to Usenet conversations. The result is an electronic town meeting of about 150,000 people—some hailing from other countries like Great Britain, Germany, Australia and Mexico—who in their various conversations create about three thousand new messages each day.


Literacy today means the computer, as earlier it meant the typewriter, and still earlier the quill pen. Helmut Kobler does a terrific job in encouraging the new literacy among college students. Nothing can be more important than that.
—Isaac Asimov

CAMPUS
COMPUTING
HOW TO USE COMPUTERS TO STUDY SMARTER, EARN CASH, AND EVEN IMPROVE YOUR SOCIAL LIFE AT COLLEGE
(No Kidding!)
by HELMUT KOBLER

Excerpted from Campus Computing, $8.95, ISBN 0-9626358-0-4, Lyceum Publishing, 2738 Parker St., Berkeley, CA 94704. (415) 841-7376. Campus Computing is written from a student standpoint, since its author, erstwhile MicroTimes columnist Helmut Kobler, is a college student himself, majoring in history at the University of California, Berkeley.

College student and longtime *MicroTimes* contributor Helmut Kobler, offers a wealth of info for the student in Campus Computing.

THE CONVERSATION SPECTRUM

You may wonder what there is to talk about with such a multitude of computer users. The latest in C data structures? VLSI chip design, or something equally stimulating? Usenet definitely has a good deal of computer chatter. The system got its start in 1979 as a network for computer scientists who wanted to talk about their work. Many of the people hanging around Usenet today are still in computer-related disciplines and professions, partly because to get to Usenet, you need access to a mainframe computer. And naturally, mainframes are more available to computer people than writers, economists or historians.

But despite Usenet's computer majority, its members manage to talk about much more than computers. Usenet is divided into electronic forums, called newsgroups, each with its own designated subject matter. Think of Usenet as an entire university, and its newsgroups as the various classrooms and lecture halls where English, economics, and biochemistry are taught.

As I write, in mid-1990, Usenet offers more than six hundred newsgroups, with subjects in just about every category that might relate to you as a student, or simply interest you as a curious, thoughtful person. Studying the

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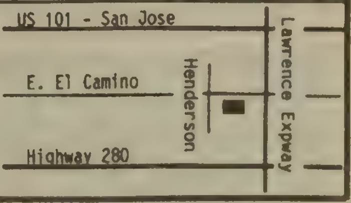

effects of the sun's ultraviolet rays on the precious ozone layer? You'll find astronomers, physicists, ecologists and plain old concerned citizens eager to exchange ideas. You may even find a scholarly audience to discuss the demise of illuminated manuscripts, and if you'd like to explore the philosophical implications of abortion or euthanasia, you're guaranteed to find an opinionated, vocal audience.

To give you a better idea of Usenet's breadth, here's a sample of newsgroup topics available:

- The space shuttle
- The environment
- Womens' rights and discrimination
- Physics, physical laws and properties
- Psychology
- African culture
- Biological sciences
- AIDS
- Issues related to men
- Genealogy
- Evolutionism versus creationism
- Middle Eastern events
- Religion
- Chess
- Tax law and advice
- Child behavior
- Logic, in math, philosophy and computers
- Legality and ethics of law
- Current events issues like drug testing and abortion
- Technical aspects of cars
- Books of all genres and the publishing industry
- Bicycles, related products and laws
- Soviet politics
- Vegetarianism
- Jokes (some tasteful, others...)
- Jazz, blues and other related music
- The Grateful Dead
- Chinese culture
- Baseball, and other major sports like football, basketball, skiing and scuba
- Poetry
- Statistics
- Job listings from around the country (mostly computer-related)
- Video technology and components
- Wood working
- Naturist and nudist activities

...and of course there's a healthy group of computer topics....

- Neural networks
- Artificial intelligence
- Computer architecture
- Computer graphics and animation
- Interactive video disks
- Every computer language around
- and just about all computer hardware, too

And if this sample seems a little exhaustive, remember that it represents only forty-two topics out of more than six hundred!

SMALL TALK, CHINESE DEMOCRACY AND COLD FUSION

The caliber of the discussions found on Usenet varies from one newsgroup to another. Some naturally digress into small talk; in another, the conversation may be too obscure to hold your attention—for instance,

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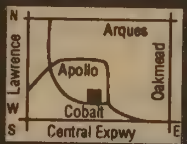

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you might find people debating bike tire pumps in the bicycle newsgroup, while you're more interested in talking about the Northwest's best mountain bike trails. Another problem is that in less used newsgroups, new messages trickle in only once every few days. This isn't rare for some of the more offbeat topics like folk dancing or soap operas.

Other news-groups can be real hotbeds, though. For instance, in the spring and early summer of 1989, people spiritedly discussed the political unrest in China and the student protests in Tiananmen Square. When the Chinese army cracked down in June, Usenet's Chinese culture newsgroup exploded. Dozens of new messages appeared each day from students, professors, Chinese natives, and anyone else concerned. On Usenet, in fact, people began to coordinate demonstrations, issue revolutionary statements, and make formal appeals to the US State Department.

Similarly, Usenet acted a bit like a scientific think-tank when two Utah scientists announced their discovery of cold fusion in 1989. Press releases were posted online, students and scientists across the country discussed the news, and a few researchers used Usenet to post their own evidence contradicting the findings.

NEWSGROUPS AVAILABLE THROUGH YOUR SCHOOL

One more note about the variety of Usenet newsgroups—since Usenet is available through school computers, your school gets to choose which of the system's six hundred or so newsgroups are actually available. This isn't censorship—it's just that Usenet's messages can take up a fair amount of your school mainframe's disk storage space. So some computer departments are selective about which of Usenet's newsgroups they want to keep, or rather to subscribe to.

Fortunately, I know of no schools that are spartan in their newsgroup selections. You should be able to find many of the newsgroups listed above, and more that are more or less in the mainstream's interest. Big schools especially, like Texas at Austin or Penn State, subscribe to the bulk Usenet. Unfortunately, when some newsgroups do have to go—at a smaller private college like Vassar, for instance—they're usually non-academic subjects like current events, baseball or religion. Chances are, though, that any four-year school will have a number of newsgroups that appeal to you.

GETTING STARTED WITH USENET

As mentioned earlier, Usenet is a feature carried by networks of UNIX mainframe computers (some mini, too) across the world. Besides doing real computer work, these mainframes exchange various Usenet messages written by their users.

For instance, let's say some student at Boston University posts his critique of *Die Hard II* in the movie reviews newsgroup. That message is actually stored on a B.U. mainframe. But perhaps once a day, the B.U.

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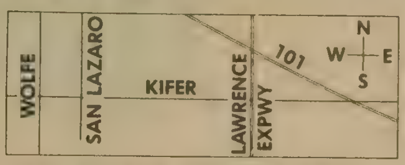

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64K CACHE
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computer calls a mainframe at M.I.T., and sends M.I.T. everything that B.U. students wrote that day.

Likewise, M.I.T. shares its latest messages, along with some it just received from Harvard and Boston College. This sort of exchange goes on among thousands of computers. While I'm over-simplifying the explanation, it's usually only a few days before most Usenet computers have the messages written across the entire network.

To read these messages, and write some yourself, you have to connect to a UNIX mainframe at school (they're pretty common). And to do this, you first need an account—a sort of membership—on such a machine. An account consists of a user ID, which is the name you'll go by on the computer (like **hkobler** or **dsmith**, for instance) and a password. Accounts are usually held by computer science and electrical engineering students whose classes require them to use the school mainframes, but even if you're a liberal arts type, you can often get an account through your school's computer science department

With your fresh account, the next step is to log on to the mainframe by either calling it with your own personal computer from home (you'll get the appropriate phone number to use along with your account), or to reach it through an on-campus terminal that's hooked into the mainframe.

MAKING THE FIRST CONNECTION

So you have your account, and you've logged on to a campus mainframe. Usenet's messages are waiting on that computer, but you have to use a special program on the mainframe that shows them to you. There are a number of different programs out there—**rn**, **read news**, **nn**—but rn is probably the most flexible and most widely used. Unfortunately, rn has a slight reputation for being complex—not unfounded, either—and there are a number of commands and procedures to know for getting around the system. I can't detail them all here, but I'll give you an overview of the fundamentals to get you started. (For all the details and steps, check out the Usenet chapter as it appears in full in *Campus Computing.)*

Anyway, at your mainframe's command prompt (usually a $, &, or % sign), type **rn**, which stands for read news, and hit return. Each time you start rn, the computer shows you the first five newsgroups available (notice the groups' official computer names, like **rec.autos** and **sci.astro**), and tells you how many new messages (officially called articles) have appeared in each one since you last checked:

Unread news in rec.autos 190 articles
Unread news in sci.astro 7 articles
Unread news in soc.culture.greek
6 articles
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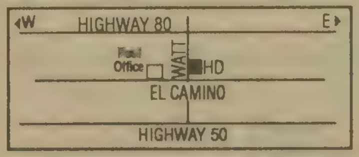

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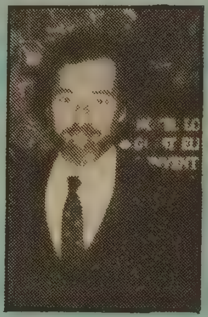

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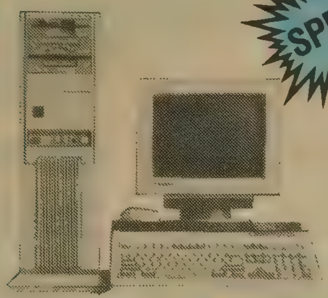

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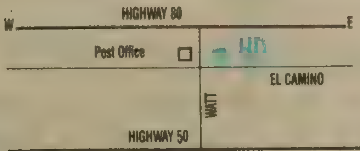

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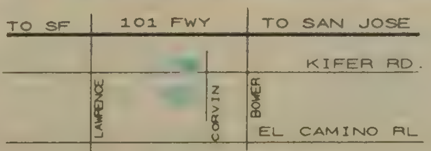

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2073 Sun's ultraviolet rays
2074 UC Star club members
2075 Re: UC Star club members
2076 Newton and decaying orbits
2077 Re: Sun's ultraviolet rays
2078 Re: Hubble Scope Screws Up!
2079 Re: Newton and decaying orbits

What next? [npq]
```

To read an article, or a range, simply type in the number of the corresponding nunbers.

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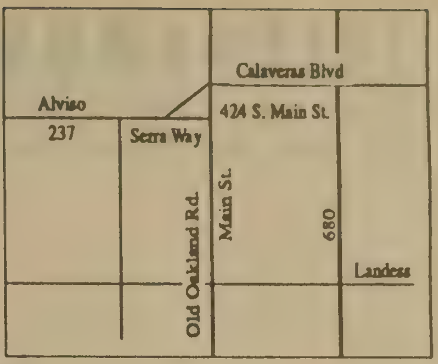

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Mini Tower case
101 Enhanced KEYBOARD
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386 25 MHZ
40 MB / 28 MS
1MB RAM Exp to 8MB
Mini Tower case
101 Enhanced KEYBOARD
1.2 FLOPPY & CONTROLLER
2 SER/1PAL/1 GAME
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For instance, typing 2076 gets you this:

```
Article 2076 in sci.astro:
From: DAEMON@CORY.BERKELEY.EDU
(Daemon Virnau)
Subject: SPACE STATION FREEDOM
Message-ID:
<8703300515.AA19549@ucbvax.Berkeley.EDU>
Date: 30 Mar 90 04:45:00 GMT
Sender: daemon@ucbvax.BERKELEY.EDU
Organization: The Internet
Lines: 6

I don't really have a working knowledge of
the Soviets' Space Station Freedom design,
but how could any design call for space-
walks to change light bulbs and batteries?
That's like designing a house so you have to
climb out on the roof to change a ceiling
light! Is there some reason that this stuff
can't be done from inside SSF? I guess that
might add to problems involved with the air
lock (getting stuff in and out), but wouldn't
this be a decent trade off for 2000+ hours of
spacewalks?

What next? [npq]
```

From here, you can move forward or backwards to articles by typing **n**, for next, or **p** for previous. If you want to reply to an article, just use **f**, for follow-up with your own remark. To jump to another newsgroup, make sure you're at the prompt asking if you want to read unread articles (**Read now?**) hit **g**, for go, and then the newsgroup's name—**g sci.shuttle**, for instance. For a list of all the newsgroups that you're not already subscribed to, hit **l** (in lowercase).

Typing **h**, for help, at any command prompt gives you a list of additional commands available. Don't expect a user-friendly response, though—rn's idea of "help" is to offer a long, long menu of bewildering commands and syntaxes.

But quitting Usenet is a cinch. Just continue to hit **q**, for quit, until you return to your mainframe's main command prompt. Here you can log off the system, use electronic mail, or do whatever else you'd like. ■

Unfortunately, when you start Usenet for the first time, the computer subscribes you to all of its newsgroups, and goes down the line, one group at a time, asking if you want to read what's new in every single one.

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• CPU 20/25/33/486	CALL

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- Dual F/H controller
- 101 keyboard
- AT case and 200W p/s

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- Intel 80386-25 CPU
- C&T chip set; AMI Bios
- 1 MB RAM on board (exp. to 16 MB)
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- Dual F/H controller
- 101 keyboard
- AT case and 200W p/s

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386-20
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- Intel 80386-20 CPU
- 1 MB RAM on board (exp. to 16 MB)
- 1.2 MB floppy drive
- Dual F/H controller
- 101 keyboard
- AT case and 200W p/s

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386SX-16
- L.M.: 20.6 MHz, SI: 18
- Intel 80386SX-16 CPU
- 1 MB RAM on board (exp. to 8 MB)
- Dual F/H controller
- 101 keyboard
- AT case and 200W p/s

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286-20
- L.M.: 25.6 MHz, SI: 23
- C&T chip set
- Same configurations as above

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286-12
- L.M.: 20.5 MHz, SI: 18
- Intel 80286-16 CPU
- Same configurations as above

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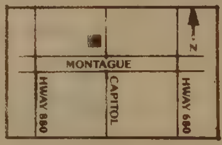

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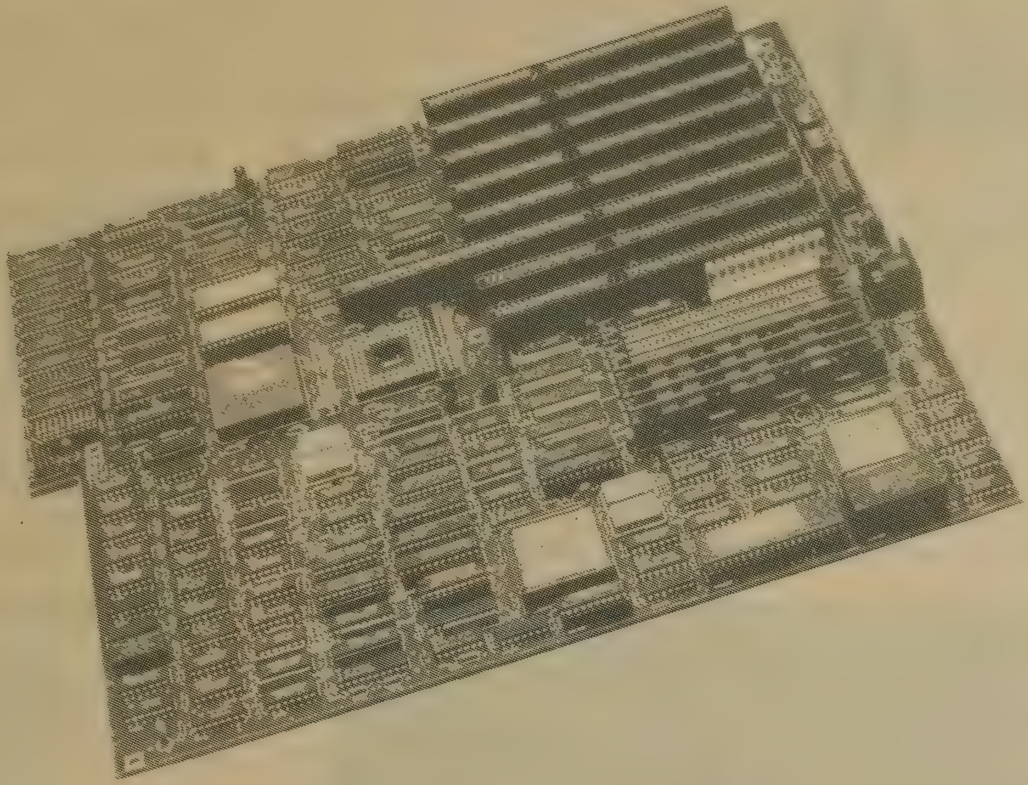

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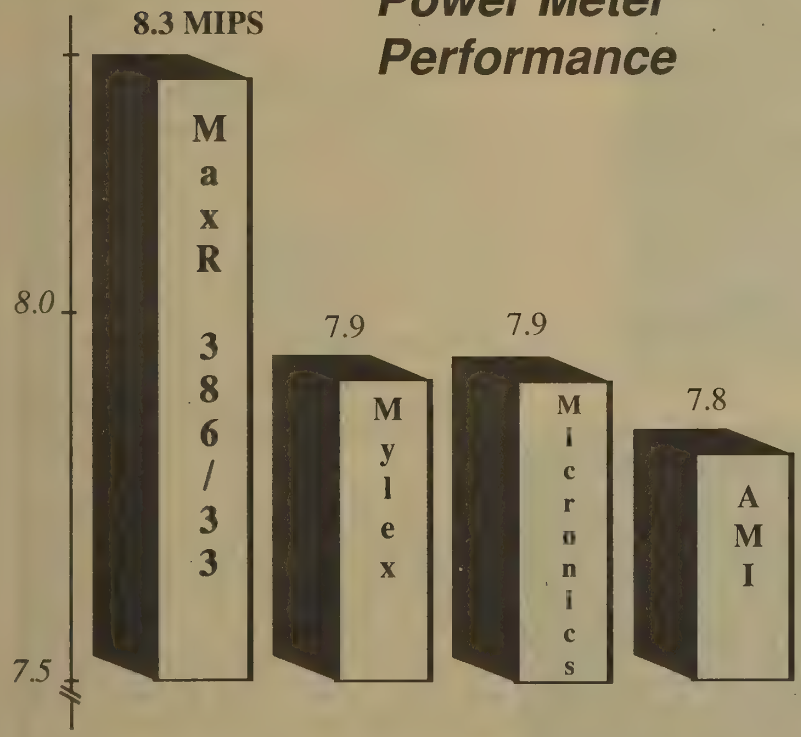

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Prodigy

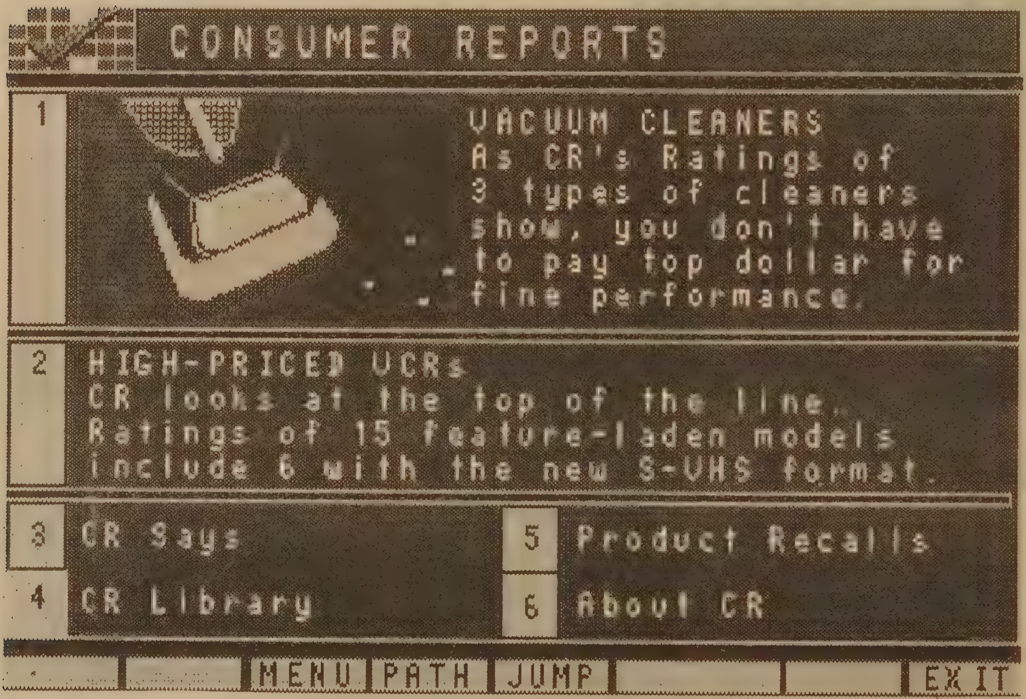
Low-Cost Online Service For Consumers

BY ED KAHN

Of all the facets of computer use, none is more overwhelming and confusing than telecommunications. Even experienced users wince at the mention of online services. And for good reason.

Computer and modem have to be in proper communication, and you have to have the right settings to allow a communication link to be established with a remote location. If something goes wrong, you often have to call in a friend or consultant with greater expertise, as the tiniest mistake will cause the whole process to fail. Even when you do make a good connection, there are other problems. And the learning curve is expensive as well as difficult; many services charge you by the minute of connect time, not to mention long distance charges.

Prodigy, a joint venture of IBM and Sears, attempts to solve these problems and create an online service that's inexpensive and easy to use. Prodigy charges a flat rate of $9.95/month for unlimited access to the service. Once you are on line, you have access to about seven hundred different conferences or services. Prodigy offers both information retrieval and activities. The result is an electronic mail/library all rolled into one.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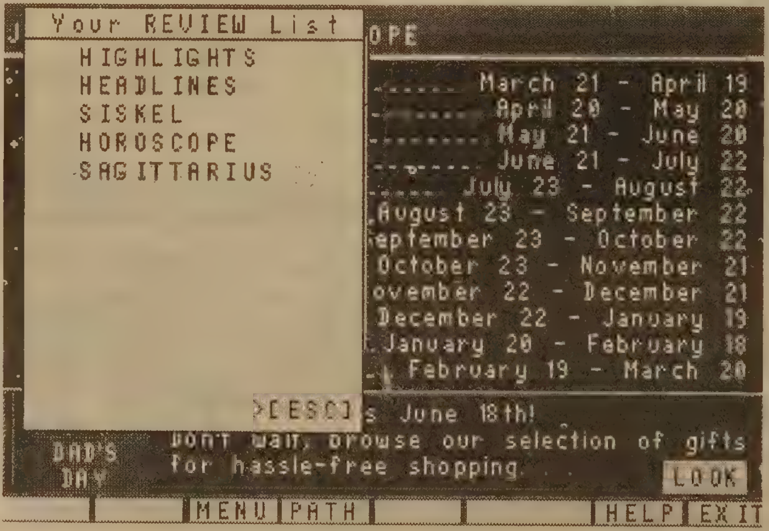
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March 21 - April 19
April 20 - May 20
May 21 - June 20
June 21 - July 22
July 23 - August 22
August 23 - September 22
September 23 - October 22
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November 22 - December 21
December 22 - January 19
January 20 - February 18
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GETTING STARTED

When you sign up, you'll get a kit in the mail that contains all of the software and instructions you'll need to get started. You will need either an IBM family or Macintosh type computer and a modem—either 1200 or 2400 baud. From selected cities (and the list is growing) your modem dials a local phone number and you're in business. Although there are instruction manuals with the setup kit, the service has been designed to be so simple that you can find your way around with little or no instruction. If you have trouble, you can log on to the About Prodigy conference and find answers to most of the questions. A monthly newsletter offers added tips.

When you instruct your computer and modem to dial up Prodigy, you will be asked for your password. When the service connects, everyone gets the same opening screen which features news highlights of the day. From there, you can ask for more detailed information about any of the topics mentioned, or you can move immediately to the topics that interest you. Anyone can access any of the hundreds of topics and conferences, but each user can set up a unique path that brings up his or her favorite topics right in order. It is simple to abandon your pre-selected path and move about freely from topic to topic.

The user interface is organized hierarchically. If you don't jump right into your own path, the bottom of the screen presents you with several options, including Menu. Menu

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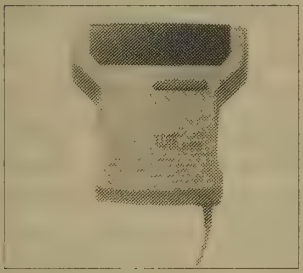

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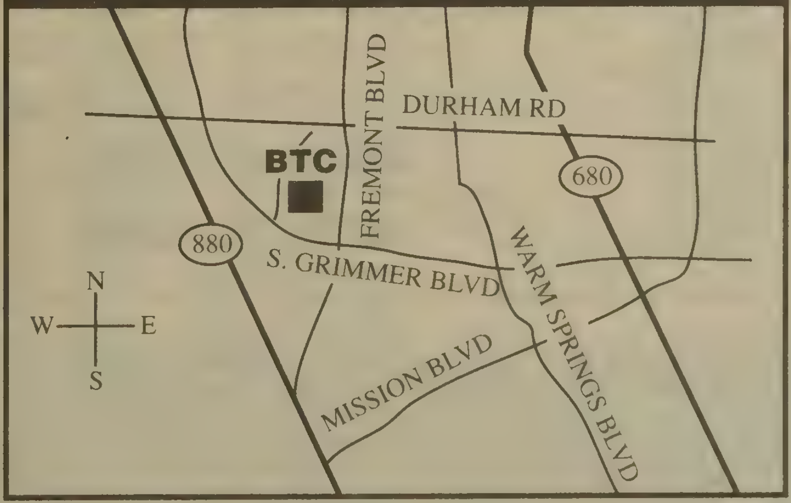

takes you to a screen called Guide. Guide offers five big categories: News & Features, Living, Shopping, Money, Travel and Computers. When you choose any one of these, you will get another menu. On and on it goes until you finally reach one of the seven hundred topics you want. After a short time, you find yourself scooting around like you've been doing it all your life.

You can also bypass the menus and jump directly to any topic by typing the right label. The entire list is available online or in a booklet which Prodigy has.

AVAILABLE SERVICES

Your membership gives you the right to sign up as many as six members of your household for custom-made interfaces reflecting their individual interests. Each person will be given a different password.

When users get into the service, they are routed to the places within Prodigy that most interest them: sports, financial services, weather reports from the home office, recordings, movie reviews, computer games, a computer column, recipes, education, consumer reports of home appliances, and travel tips that will be helpful in planning the summer vacation. It is also possible to book tickets through Prodigy. There is something for everyone.

Consumer Reports magazine maintains a number of different conferences, so you can easily check out hundreds of products on line. In effect, you have a huge library of past issues of *CR* available. For many products, after you have made a decision about what to buy, you can move on to actually order the product or service through a Prodigy vendor.

Prodigy is interactive. You can exchange electronic mail with anyone who is a Prodigy subscriber, as well as with some of the vendors. A discount brokerage firm allows you to execute stock transactions directly through Prodigy. You can also order things from Sears and other retailers and have the merchandise delivered directly to your home. Banking, grocery shopping, and a myriad of other products and services are also available.

Although Prodigy is a national service, certain nodes are local in order to accommodate grocery shopping and other businesses that must be local. This means that an Atlanta subscriber will have access to a slightly different mix of retailers than a subscriber in San Francisco. Prodigy is a lot more than information.

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On every display are small ads at the bottom of the screen. You can ignore them or investigate. There's at least one notable exception: *Consumer Reports,* as a magazine, does not allow advertising. The same policy has been carried over into this electronic version of the magazine. No ads appear on any of the *Consumer Reports* screens.

To date there are about a quarter of a million subscribers to Prodigy and the number continues to grow as more cities get Prodigy access numbers. If you live in Santa Rosa, for

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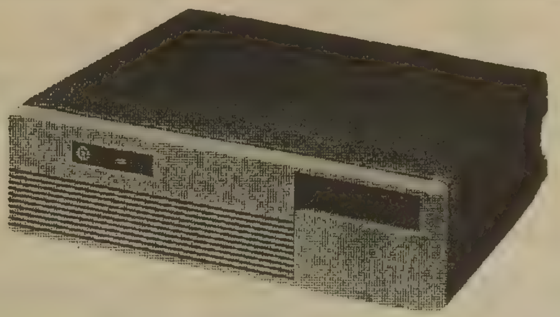

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- MEET FCC REQUIREMENT

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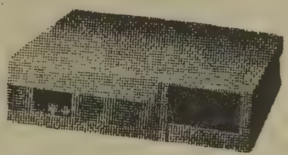
- 16.73" X 21.5" X 6.26"
- AT POWER SUPPLY
- 8 SLOT PORTS
- SLIDE IN TYPE
- 1 PC/CARTON/26.0 LBS.
- MEET FCC REQUIREMENT



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- 5 X 5.25" HALF HEIGHT
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- XT POWER SUPPLY
- 8 SLOT PORTS
- SLIDE IN TYPE
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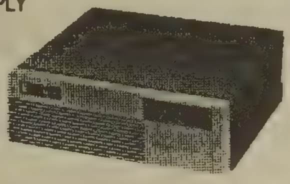
- MEET FCC REQUIREMENT



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- SLIDE IN TYPE
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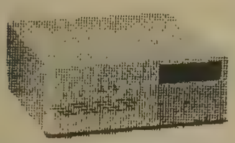
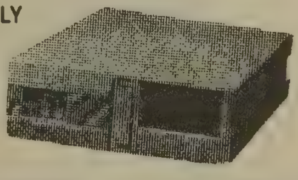


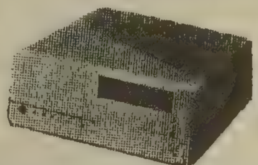
IW-B570 (BABY AT CASE)

- BABY AT MAIN BOARD
- 3 X 3.5" FDD, 1 X 3.5" FDD,
  1 X 3.5" HDD
- 16.73" X 17.4" X 6.26"
- BABY AT POWER SUPPLY
- 8 SLOT PORTS
- SLIDE IN TYPE
- 1 PC/CARTON/22.0 LBS.
- MEET FCC REQUIREMENT



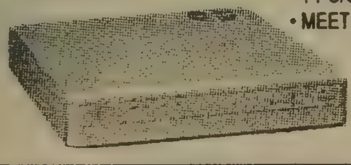
IW-BA77 (BABY AT CASE)

- AT, BABY AT MAIN BOARD
- 3 X 5.25" FDD,
  1 X 3.5 FDD
  1 X 3.5" HDD
- 16.53" X 14.26" X 6.68"
- PS/2 POWER SUPPLY
- 8 SLOT PORTS
- SLIDE IN TYPE
- 1 PC/CARTON/20.0 LBS
- MEET FCC REQUIREMENT



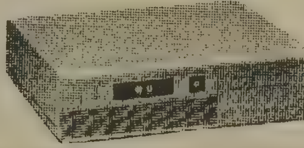
IW-K101 (TERMINAL CASE)

- XT, BABY AT MAIN BOARD
- 1 X 3.5" FDD, OR
  1 X 3.5" HDD
- 15" X 15.35" X 2.8"
- 70W SPECIAL DIMENSION
  POWER SUPPLY
- 3 SLOT PORTS
- SLIDE IN TYPE
- 1 PC/CARTON/15.0 LBS
- MEET FCC REQUIREMENT



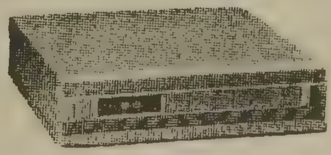
IW-E13 (SLIM CASE)

- XT, BABY AT MAIN BOARD
- 1 X 5.25" FDD,
  1 X 3.5" FDD,
  1 X 3.5" HDD
- 16.5" X 16" X 4.2"
- PS/2 POWER SUPPLY
- 5 SLOT PORTS
- SLIDE IN TYPE
- 1 PC/CARTON/16.0 LBS
- MEET FCC REQUIREMENT



IW-F13 (SLIM CASE)

- XT, BABY AT MAIN BOARD
- 2 X 3.5" FDD, 1 X 3.5" HDD
- 16.5" X 16" X 4.2"
- PS/2 POWER SUPPLY
- 5 SLOT PORTS
- SLIDE IN TYPE
- 1 PC/CARTON/16.0 LBS
- MEET FCC REQUIREMENT

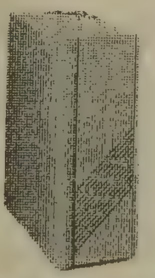


IW-G13 (MINI TOWER CASE)

- XT, BABY AT MAIN BOARD
- 3 X 5.25" FDD,
  1 X 3.5" FDD,
  1 X 3.5" HDD
- 7" X 16.3" X 15.4"
- PS/2 POWER SUPPLY
- 8 SLOT PORTS
- SLIDE IN TYPE
- 1 PC/CARTON/24.0 LBS.
- MEET FCC REQUIREMENT

IW-Q103 (MIDI TOWER)

- AT, BABY AT MAIN BOARD
- 8 X 5.25" HALF HEIGHT
  1 X 3.5" FDD
- 8.46" X 16.73" X 21.26"
- AT "L" TYPE POWER SUPPLY
- 8 SLOT PORTS
- SLIDE IN TYPE
- 1 PC/CARTON/28.0 LBS
- MEET FCC REQUIREMENT



IW-T398 (BIG TOWER CASE)

- AT, BABY AT MAIN BOARD
- 6 X 5.25" HALF-HEIGHT
- 16.97" X 7.57" X 24.7"
- AT, "L" TYPE POWER SUPPLY OR
  BABY AT SQUARE POWER SUPPLY
- 8 SLOT PORTS
- SLIDE IN TYPE
- 1 PC/CARTON/38.0 LBS
- MEET FCC REQUIREMENT

EFI COMPUTERS INC.

47448 Fremont Blvd., Fremont, CA 94538 • Tel: (415) 657-5868/9 • FAX: (415) 657-7661 instance, you will currently have to make a long distance call to access the service. So the future of the service depends upon its availability in more cities across the country.

IS IT FOR YOU?

If all of this is available at such a low cost, why does anybody bother with the expensive services? Is it time for CompuServe to close up shop?

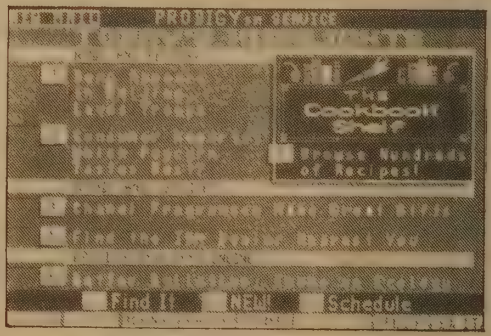
Not quite. The focus of more traditional services is a good deal different from Prodigy's. For instance, if you ask for stock quotations on Prodigy, you will actually be accessing a portion of the Dow Jones News Retrieval Service—but only a small portion of what that service has to offer. You are essentially limited to business headlines and stock quotes. While the information you get is the same as from the parent service, the interface has been tailor-made for Prodigy. You have no way of knowing that you are accessing anything other than Prodigy, but you are severely limited in your access to the other service.

You cannot see into the pages of the *New York Times* or get corporate business statements through Prodigy, even though Dow Jones News Retrieval offers them. You get only what Prodigy has signed up for.

Likewise, there is no downloadable database accessible through Prodigy. Computer software is for sale through vendors, but there is no downloadable shareware or public domain library. There are no computer special interest groups. There are, however, conferences available where you can express your opinions on a wide range of subjects.

In some way, Prodigy is like the old-fashioned party line in that you can learn what others have to say on a subject and put in your $9.95's worth.

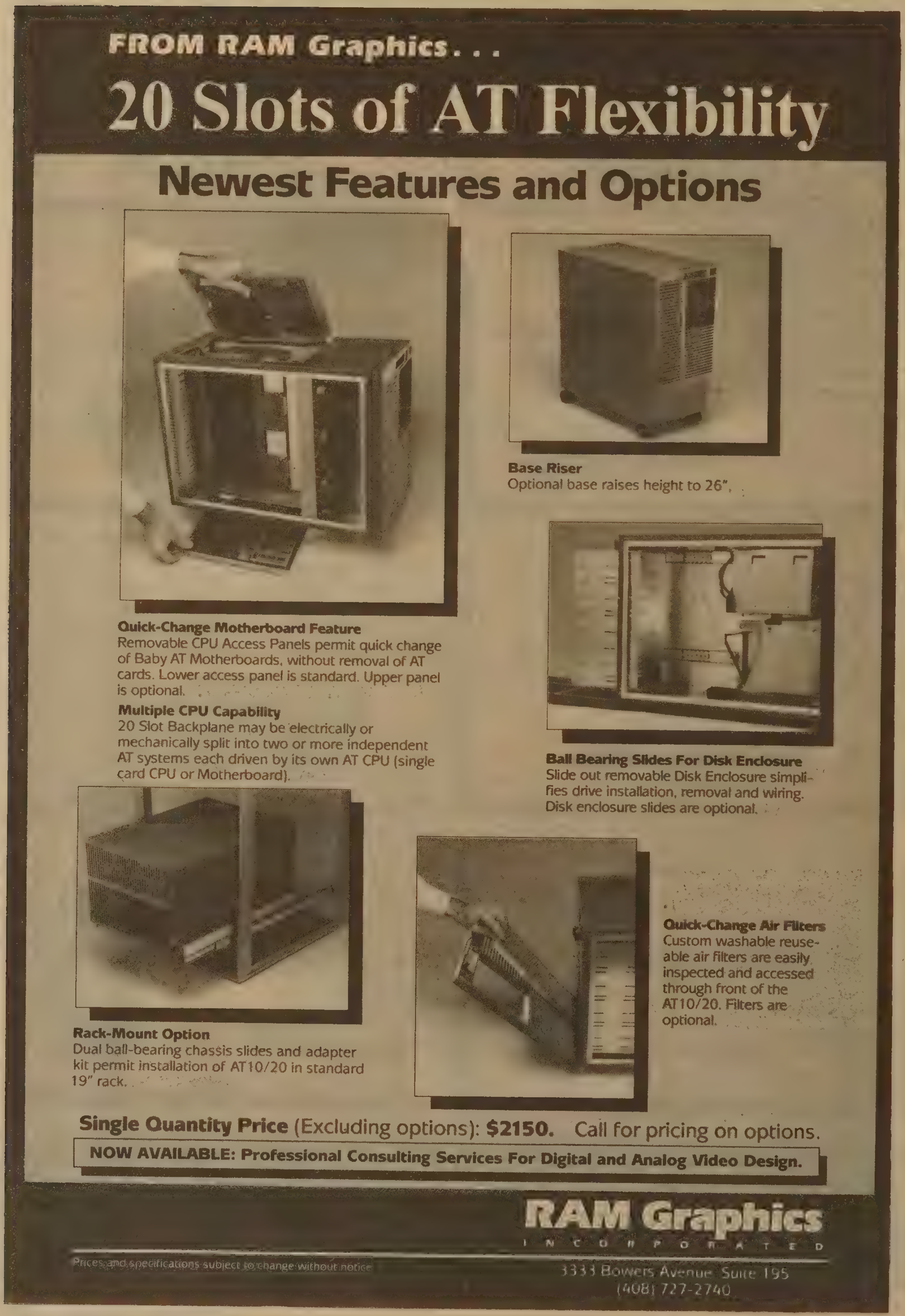
The major drawback of Prodigy, however, is its speed. Although you can access it with a 2400 baud modem, it is still frustratingly slow. At 1200 it is too slow for my limited patience.



Prodigy's log in screen shows you a daily list of new information.

Magazines and newspapers are filled with introductory offers for Prodigy. I got a mailer offering me a free 30-day trial. My phone call in response to the offer got me a kit containing the software and a code that allowed me to sign on. After that, just like clockwork, I got a bill every month for $9.95. Other offers, available in computer stores, even have an inexpensive modem as well as an introductory offer in the package. Prodigy wants to acquire a huge customer base and is willing to go the extra mile to make you part of it.

Prodigy wants to go where no company has successfully gone before. They want you to use Prodigy as a newspaper, store, library and amusement center. If you live in a city where Prodigy is available it may well be worth taking a test drive. ■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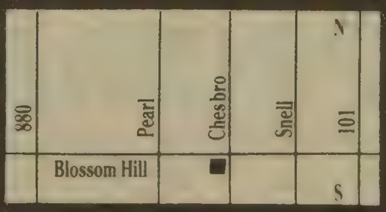

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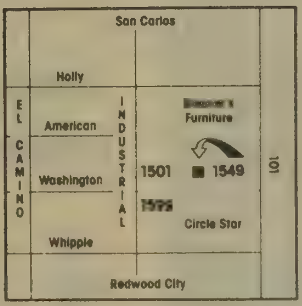

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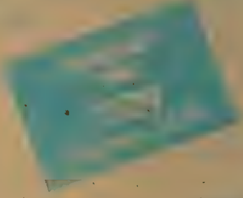

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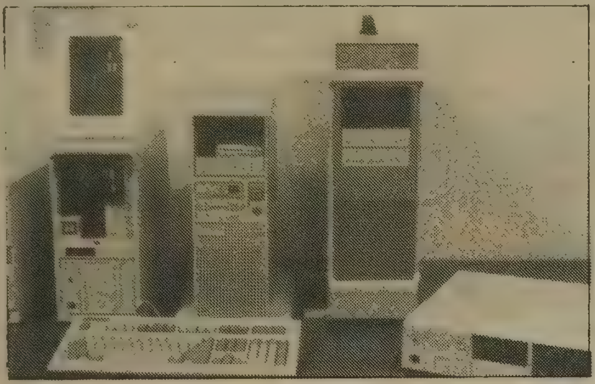

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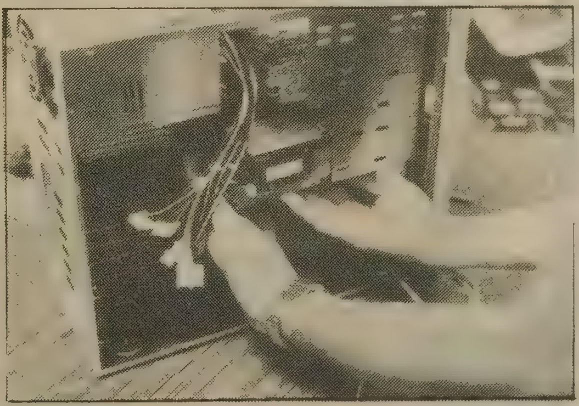
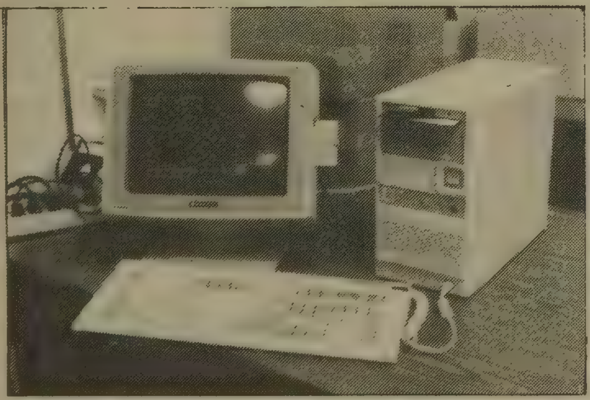
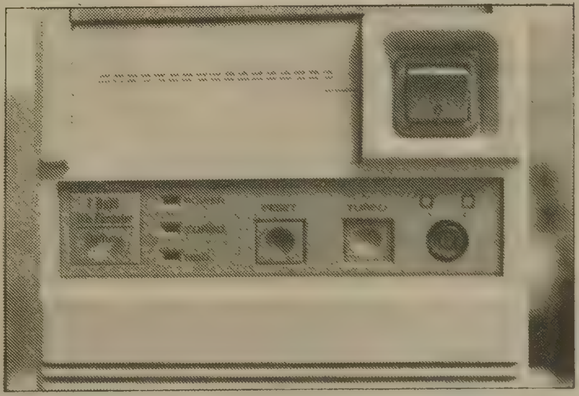
Install the RAM you need on the motherboard, then test it to make sure everything functions properly.

Then open the chassis, place the motherboard, and install disk drives, graphics cards, etc.





When you're done, you'll have your own custom system, and at a great price.



Domino also offers facilities and assistance for do-it-yourself computer repair at its self-service centers, with locations in Emeryville (415/653-6286), Milpitas (408/946-6991), Redwood City (415/367-9322), and San Francisco (415/668-9311).

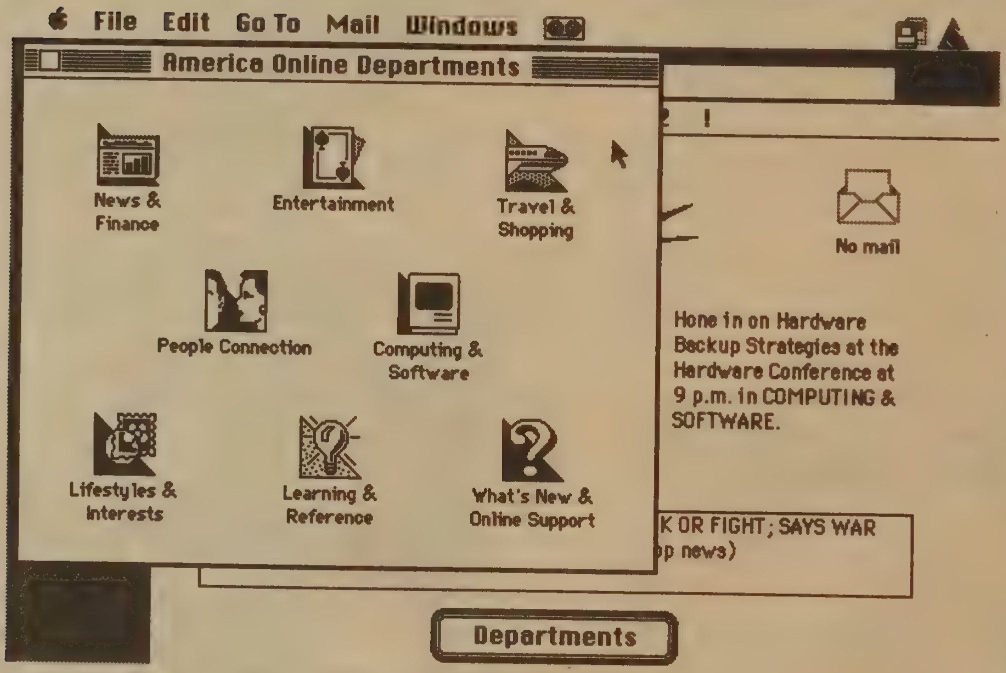
America Online

AppleLink For The Rest Of Us?

BY MIKE MARKOWITZ

Anyone with a computer, a modem and a reckless disregard for the cost of installing additional phone lines can start a bulletin board, but starting a new commercial online telecommunications service takes massive chutzpah and serious venture capital. The barriers to entry are not quite as severe as, let's say, starting a new automobile manufacturing company, but the market is dominated by a few big players like CompuServe and GEnie.

Last year The Source, one of the pioneer online services, was bought out and terminated by CompuServe. Prodigy, a service backed by the might of Sears and IBM, has reportedly invested hundreds of millions of dollars in startup costs, without a whiff of profit in sight. This is not a market for the timid.



Hone in on Hardware Backup Strategies at the Hardware Conference at 9 p.m. in COMPUTING & SOFTWARE.

K OR FIGHT; SAYS WAR
p news)

America Online offers a wide range of services and activitites.

A few years ago, Quantum Computer Services, Inc. (no relation to the disk drive maker), based in Vienna, Virginia, tarted a successful online service for Commodore users. In 1987, Quantum inked a deal with Apple to establish "AppleLink Personal Edition" a consumer-oriented version of Apple's own internal email system. Initially, this was limited to an Apple II interface. The Macintosh software apparently had a long, stormy and troubled development cycle.

Last year, Apple pulled out of "AppleLink Personal Edition," reportedly because of Quantum's plans to launch a service for PC users. Renamed "America Online," (AO) the service now sports a stylish Macintosh interface, a rich set of features and a growing population of The Rest of Us.

Quantum officials are unwilling to reveal total AO membership. It certainly numbers in the thousands, but I have never experienced any difficulty accessing the system. There seem to be fewer long delays and crashes than I experienced on competing systems when I used them regularly (Southern California phone lines have notoriously poor data transmission quality). Most of the original beta-test group of Apple II enthusiasts are still active on AO, many as Mac users, which can be regarded as a true vote of confidence in the service.

America Online insulates the user from the mechanics of telecommunication. Conventional online services are based on the model of a dumb terminal connected to a host. Communication, in both directions, is limited to a stream of text and a few basic control characters. AO's software, on the other hand, knows it is talking to a Macintosh. It can respond to mouse-clicks and menu selections. It can tell your computer to display windows and icons of various kinds, play digitized sounds, and generally behave like a Mac.

GETTING STARTED

Setup is extraordinarily simple. You need a Mac Plus or later CPU, a Hayes-compatible modem, and a phone line. For users with a color system, there are functional and attractive color graphics. A hard disk or a second floppy is convenient, if you intend to download files.

The AO program disk confirms your equipment setup and dials a special toll-free number. You then select a local Tymnet or Telenet node as your regular dial-up number. You select a password, a "screen name," or user ID, and a billing option (MasterCard, VISA or direct checking account deduction, with a $2 monthly service charge). If you run into trouble, a toll-free help line, manned by courteous, competent human beings, is always at hand. There is even a toll-free Customer Relations teletype line for hearing-impaired members.

In California I counted about fifty-eight local numbers for 2400 baud connection, and 137 numbers for 300/1200 baud connection, so unless you live in a fairly remote area, dialing into AO is a local call.

The monthly membership fee is $5.95. A colorful thirty-page monthly "program guide" is mailed to members. Connect time is billed at two different rates. "Non-prime time," from 6 pm to 6 am on weekdays and all day on weekends and certain holidays, is $5 per hour. Prime time includes everything else, and costs $10 per hour. Users in Alaska, Hawaii and Canada incur a surcharge of 20 cents per minute (or $12/hour—ouch!). Rates are the same whether you connect at 300, 1200 or 2400 baud. Modems above 2400 baud are not supported.

SERVICES

A good Mac interface usually provides several different ways to do something, so AO

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offers a variety of navigation tools. You can type a "keyword" to go directly to a specific area, select from a menu or click on an icon. There is extensive "cross-referencing" to ease the job of exploring this large data space. Different functional areas are represented by icons on an opening screen:

Computing and Software—this includes Apple II and Macintosh special-interest forums, public-domain libraries, and "Industry Connection," a series of bulletin boards operated by software and hardware vendors.

People Connection—a classic interactive "chat" or online conference area. You can create private "chat rooms" for small groups, ignore someone, or locate someone. Depending on the time of day, the public chat areas tend to be dominated by teens discovering the thrills of online socializing.

Travel and Shopping—includes an online travel agency, EAAsy SABRE (for airline reservations), Comp-U-Store, a buying service that lists over 250,000 discounted products, and LaserDirect, a printing service.

Entertainment—includes online games, music and movie reviews, horoscopes, and comedy.

News and Finance—wire service news and weather reports, stock exchange quotations, sports, technology and opinion ("Express Yourself").

Lifestyles and Interests—an ever-changing collection of special interest and hobby forums.

Learning and Reference—includes an encyclopedia, tutoring center and online courses of various kinds.

What's New and Online Support—free of charge during non-prime hours, this area includes notices of new or noteworthy activities, customer relations hotline and member directory.

Electronic mail ("The Post Office") is accessible from within any area. You can send almost any kind of file by mail, not just text messages. You can easily download incoming mail to read offline. You can also compose your messages offline to save on connect charges. The AO Macintosh software includes a copy of StuffIt, the standard Mac file-compression utility. Apple II users can download Shrinkit, the new ProDOS file compression shareware standard from the Apple II utility forum.

Downloading files is relatively painless. A bar graph indicates the time remaining, and a cheery digitized voice announces "File's done!" so you can do something else while the download chugs along.

Unlike some online services, where the Heavy Hand of Censorship has been known to Rear Its Ugly Head, AO's management shows an admirable respect for freedom of electronic speech. Or maybe Apple II and Mac users are just wimps who never write anything seditious, obscene or offensive.

THINGS WE'D LIKE TO SEE

AO is certainly not perfect. I'd like to see gateways to other important electronic mail systems, particularly MCI Mail and the "real" AppleLink. I'd like a way to download an entire folder (a "thread" of discussion) at once, rather than each item as a separate file. The Apple II community would love to see a native IIGS version of the AO software, rather than the present 8-bit "MouseText" inter-

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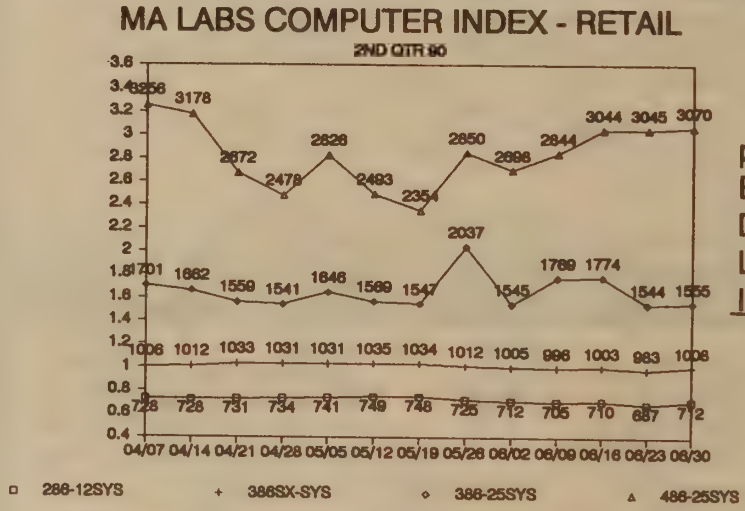

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Digital Linear Keyers: Linear keying is the process of blending or replacing a specific portion of a video signal with another signal. It is used to insert live or still video, with soft or smooth edges, and to create special effects such as blending, mixing, fading and disssolving between images. Select from 256 levels of transparency between video and graphics!

Image Capture: The TARGA+ and NuVISTA+ offer real time image capture, with software selectable color depth and resolution. From 256 to 16.7 million displayable colors. 512 x 482, 640 x 480, 756 x 486, 1024 x 768. Your choice!

Broadcast Quality Encoder and Decoder: The TARGA+ and NuVISTA+ introduce Truevision's third-generation video encoder/decoder technology on-board. The encoder/decoder allows you to input and output composite video, S-Video (Super VHS, Ed Beta) and RGB in either NTSC or PAL formats.

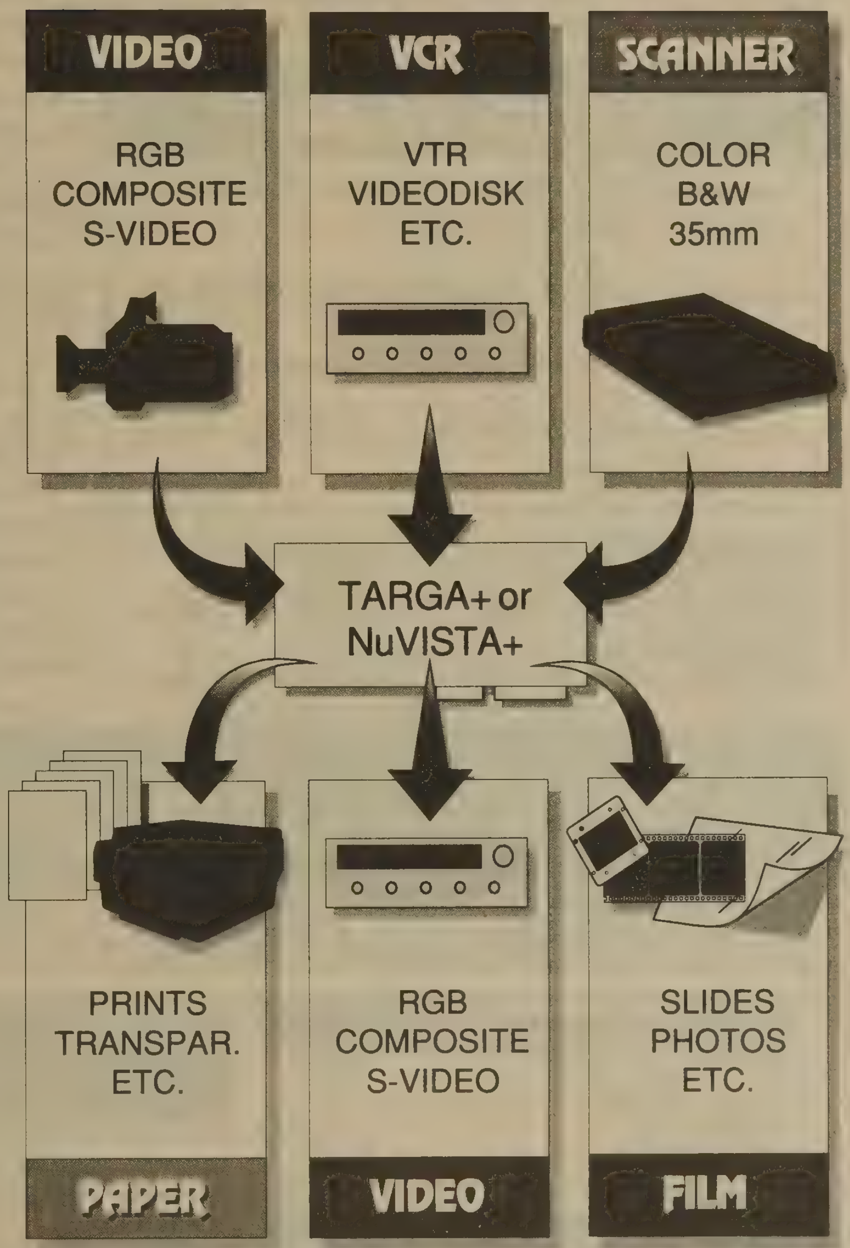
Advanced Genlock: Genlock enables the TARGA+ and NuVISTA+ to synchronize, or lock to, a broad range of video sources. Design improvements yield a more robust genlock capability which allows you to lock to an even greater spectrum of video equipment, including VCRs (even in still-frame mode), video disk players and still-frame cameras.

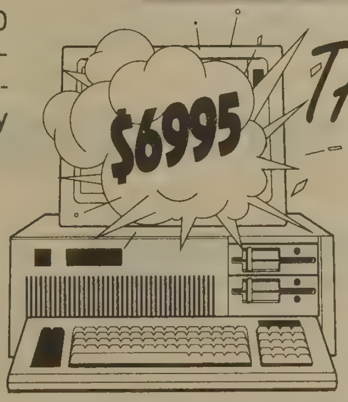
Microchannel Version of TARGA+: This new board allows any PS/2 operating under DOS to utilize the TARGA+ capabilities, and access over 300 TARGA software programs!

Windows 3.0 Support: A Windows 3.0 driver will ship with all TARGA+ boards.

XCMD and XOBJ support: NuVista+ ships with Hypercard 2.0 XCMDs and Director 2.0 XOBJs. These externals give you maximum flexibility in creating animations, presentations, and video productions. With these XCMDs and XOBJs, you can control virtually every NuVISTA+ feature!

Color Cycling: Both the TARGA+ and the NuVISTA+ have lookup-tables so 8 bit color cycling effects can be used. Excellent for quick real time effects like showing water moving through pipes, lightning on a weather map, or just giving attention to a specific area of your graphic.





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face, but the management seems to have categorically rejected this idea.

EVALUATION

I asked some friends and colleagues who use the service for their opinions about America Online.

A TYPICAL EVENING

One way to convey the variety of AO is to sample a typical evening's activity. Here's Sunday, June 3, 1990:

8:00 Apple II: Education (CONF) Hypermedia: Ideas to Make It Work in Your Classroom

8:00 Macintosh: Music and Sound (CONF) Getting Started with Mixing Boards

9:00 Apple/Mac Beginners' (CONF) Join Joey As He Hosts AFL Sandy B's Birthday Party Online

9:00 Mac/Apple: User Group (CONF) Join Us for a "How To" Discussion

10:00 (CENTER STAGE) Join the Tangled Web of Fun During America Online's Trivia Game Show!

10:00 SPORTS CHAT Take a Swing at Our Favorite Sports Topic with "Bill72236"

A veteran Macintosh programmer and hacker said: "I really like it. In fact, I like it so much that I've virtually quite using GEnie and CompuServe and spend all my commercial time here."

An experienced bulletin board sysop and telecommunications guru complained: "The forum leaders, to me, seem very cutesy in their responses, and what it says to me is that they do not especially know what they are talking about. If I had a tech support type question, I sure wouldn't ask it on AOL. If I wanted to bitch about something, or show the world how cool I was, then I'd use AOL to do so."

On the positive side, he added: "I think AOL is a good place to start with telecomm. It's a system for novices. After people get their feet wet, they can graduate to the real systems. On GEnie and CompuServe, one of the biggest movements of late has been 'off-line processing.' Accomplished thru macros or 'front ends' to macro-driven type programs, they let you get on and off real quick, prepare downloading lists offline, and in general, just make using those services much more efficient. Even though CompuServe is over twelve bucks/hour, using TIC and Co-Pilot, I bet it actually costs less to use..."

To get a woman's perspective, I asked a Macintosh graphic artist and consultant, who noted: "When my profile had me listed as a single person, there were guys from all over the country sending me instant mail online (obviously trying to pick up on me). I have since changed it to say nothing, and that problem stopped."

America Online is a good choice for beginners who are interested in learning about telecommunications. It may lack the depth and coverage of the longer-established CompuServe and GEnie services, but it has a lot more substance, and a much better interface than the lower-cost Prodigy.

A growing number of important players in the Macintosh universe are showing up on AO—publications, vendors, opinion leaders. It is a particularly good value for thousands of users who work with both Apple II and Macintosh systems. ■

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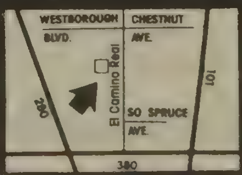

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THE 386

5th Anniversary Sale!!

ZTS-386 25 MHz

Landmark=34 MHz SI=29

Best Buy!

~~$1999~~
Now $1749

Options & Features that put the ZTS-386 ahead of the competition:

- Based on the enhanced chipset from Chips & Technology.
- All components are tested and certified for 25 MHz.
- 8 layer surface mount motherboard guarantees long life and improves reliability.
- Using our expertise in the PC industry, we wisely select the best and latest components available. We deliver a computing piece of art which is too superior to ignore.
- We proudly offer a 105MB IDE hard disk with our systems. It is the ultimate in fast and error free drive operations. It features a 990 Kb/S transfer rate, 35 sector/track, built in HD controller, zero bad sector! No low-level format is required.
- 230 Watt power supply is standard with 5000 Volt surge protector built in and overload circuitry protection, first in the industry, protects your investment.
- 1MB 80nS RAM. Expandable to 8MB on the motherboard.
- 1.2 MB floppy drive. Reads, writes and formats 1.2MB & 360k error free.
- Socket for 80387 math co-processor. Latest AMI BIOS. 8 slot std. bus.
- 101 enhanced style keyboard. 3 different manufacturers to select from.
- *Don't settle for less! Get the best for your $Dollar.*

ZTS-386's Options and Features:

ZTS-386's are based on an enhanced chipset by "Chips & Technology" which is currently dominating the PC industry.

- BIOS and video ROM shadowing speeds up the video & BIOS routines about 15%, tested with "PC Journal" program.
- Zero wait state and memory interleaving, separately set & controlled by AMI BIOS, speeds computing up to 30%, Norton test.
- Programmable BUS and DMA speed! You can easily set the BUS and the DMA speed from 8 to 12 MHz. That prevents conflict at high processing speed and guarantees safe future upgradability!

Also Applies to the ZTS 386 SX

TIPS FROM Z.T.S.

Many 386's run only Microsoft programs under latest Windows-386. ZTS-386 was found as one of the very few computers that proves total compatibility by running other programs under Windows as well (as in Compaq & IBM PS/2). For example using Dbase III under Windows-386!

ZTS-386sx

~~$1299~~
Now $1049

Landmark = 20.6 MHz
16 MHz 386sx system

Uses "NEAT" chipset. See details on C&T

- 1 MB RAM, expands to 8MB on board.
- 1.2 MB floppy drive TEAC.
- 42 MB hard disk with 1:1 interleave. (IDE, by Western Digital)
- 16-bit controller for 2 fp & 2 HD
- Socket for Intel Co-processor 80387sx.
- Tactile feel keyboard, 101 key-style KB
- Video Card and Monitor Extra

The ZTS-386sx system is designed with the future in mind. It takes advantage of the NEAT chipset from Chips & Technology, which offers you the full capability of the 386 with it's superior features. It's a com-plete 386 system with 16-bit design. It runs all of the Multi-tasking and Multi-user software.

Addition and upgrade:

Mono card & Monitor	$129
EGA card & Monitor	449
VGA card, 16-bit & VGA monitor 800x600	**539**
3 Lynx 800x600 VGA	386
Nanao 16" 1025x768	999
40 MB IDE hard disk	359
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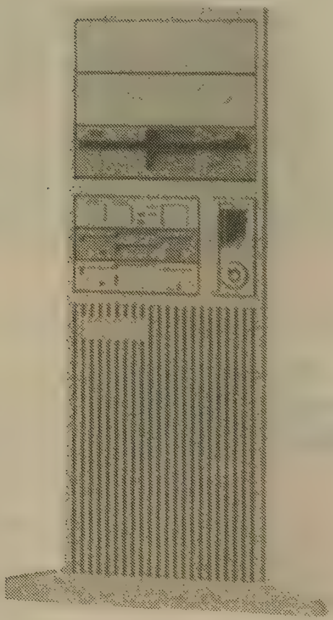
EXPERTS

Quality is not an option at Z-Tech It's our Standard

ZTS-486i
The Hit of 1990

Landmark speed 117 MHz MIPS 11.9

We have been working for months evaluating many different 486 systems to select the best performance and most reliable computer system that can ever be built. We insisted on American made system board and will not give up any of the new features of today's technology.



Why ZTS-486 outperforms many others

It is designed to be a true 486 computer and uses the full power of the 486 CPU. It uses a real 486 Bios by Phoenix or AMI. Many manufacturers rush to catch up with today's market, so they just imbedded the 486 CPU to an already existant 386 motherboard with 386 Bios.

- *Based on the new improved Intel CPU 80486-25MHz.*
- *Built-in cache and Math Co-processor. Socket for Weitek.*
- *Video RAM and BIOS Shadowing, Switchable On/Off.*
- *CPU Cache design can be enabled or disabled.*
- *Latest Phoenix or AMI 486 BIOS, supports all 386 software.*

~~$4860~~
Now $4490

- *205MB IDE HD by Conner. 1225 KB Sec, 3.5" Drive, 16MS, Built in controller with 32K cache. It is the ultimate in fast, error free drive operations. No low-level format is required.*
- *235 Watts custom designed power supply with 5000 volt surge protector built in. Noise Free. (Patent pending)*
- *Full size system board. Uses TTL discreet components.*

ZTS-486i Features!!!!

- *4MB RAM 70ns. Expandable to 16MB on the motherboard. It can take 1, 2, 3, 4, 8, 12 or 16 MB of SIMM, 32-Bit.*
- *8 Slots, all 16-Bit Slots. Can be used as 8-Bit also.*
- *1.2 MB Floppy Drive, 16-Bit controller, 2 Flp & 2 HD.*
- *Newest Super VGA Card, Paradise 1024, 512K RAM, 16-Bit.*
- *Omni style keyboard. 102 or 101 Keys. 2S/2P.*

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VGA Monitor Nanao 9070, 16″ 1024x768	1090
Memory Upgrade to 4MB Ram	379
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Tape Backup, Modem, Mouse, others	CALL

ZTS-386 33MHz

Intelligent cache controller design.
64K Cache, Static ram 25ns
Landmark Speed = 55MHz MIPS = 7.5

Basic System Configuration

- * 386 33MHz, Zero wait state 64k cache.
- * Latest BIOS by Phoenix or AMI.
- * Built-in setup program on booting.
- * Socket for 80387-33 or Weitek chip.
- * 1 32-bit, 5 16-bit & 1 8-bit slots.
- * 16-bit controller for 2 flps & 2 HD.
- * 1 MB RAM, 80ns, up to 8 MB on M-board.
- * 1.2 MB floppy drive. R/W/F 1.2MB & 360k.
- * 101 or 102 enhanced style keyboard.
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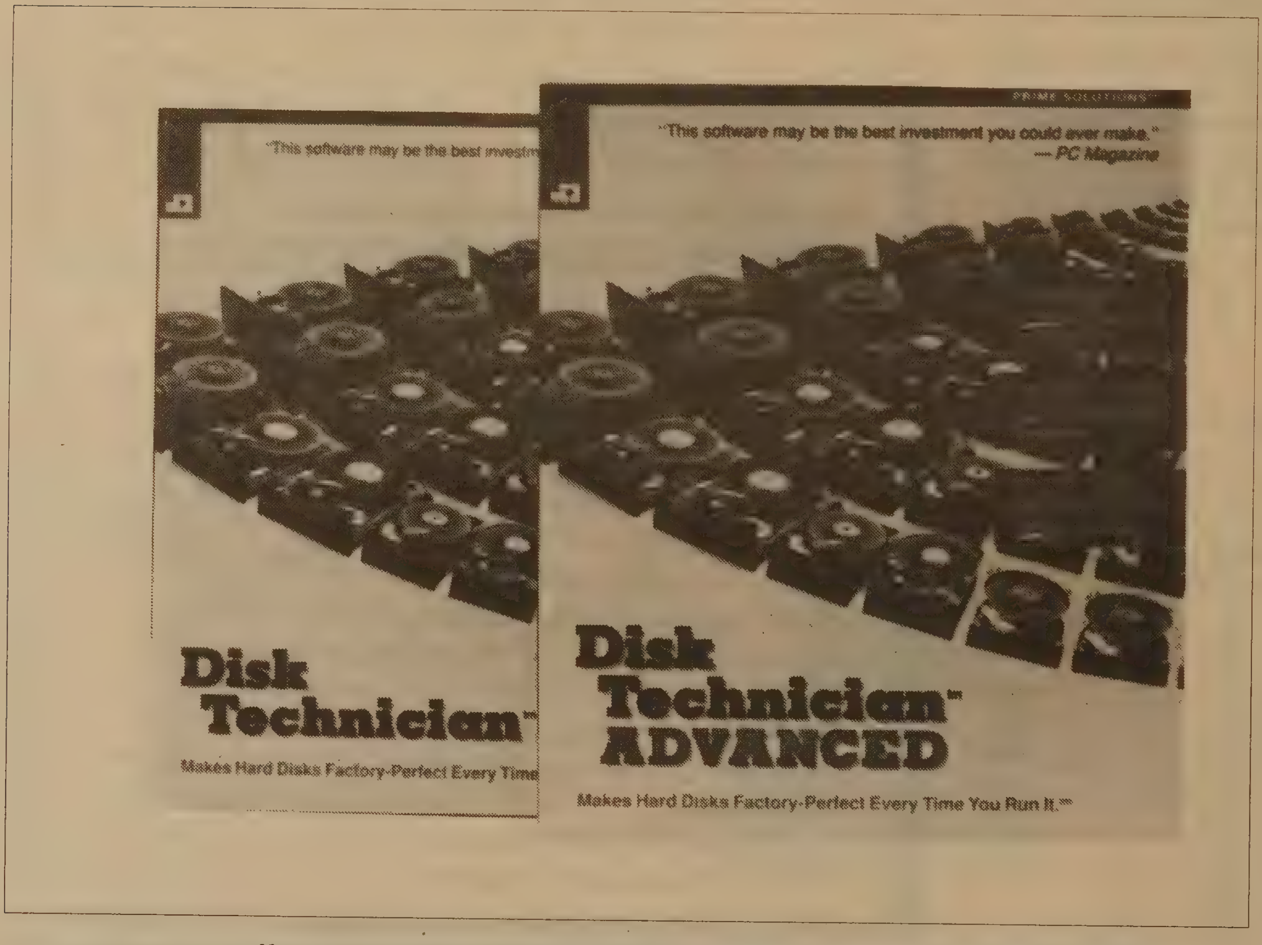
Hard Disk Rescue Packages In Action

Disk Technician, SpinRite II And Norton Disk Doctor Compared

BY WAYNE A. YACCO

Much of your working life depends on your hard disk. Hard disks, like all such things, sometimes fail. When they do, a host of software vendors offer competing approaches to rescuing your data.

Prime Solution's Disk Technician (DT) v4.57, Gibson Research's SpinRite II, and Peter Norton Computing's Norton Disk Doctor 4.5 (NDD) are hard disk rescue utilities that not only save files from corruption, but will restore areas of the hard disk or remove them from service as appropriate. Each attempts to recover data from failing sectors and will flag damaged or weak sectors it can't electronically repair. All three utilities can attempt to repair tracks by performing a low-level reformat—without disturbing data. DT and Gibson will also optimize the drive's interleave factor.


PRIME SOLUTIONS
"This software may be the best investment you could ever make."
— PC Magazine
Disk Technician
Makes Hard Disks Factory-Perfect Every Time
Disk Technician ADVANCED
Makes Hard Disks Factory-Perfect Every Time You Run It.

If your machine has a fairly standard controller, you' ll find Disk Technician a valuable tool.

DT does its job differently from the other two. Unlike its competitors, DT doesn't automatically accept a sector that can be read after several tries. It judges sectors not on their ability to be successfully read, but on their lack of soft errors or the ability to correct soft errors that are found. Gibson also claims to recognize soft errors, yet it accepts many areas that DT rejects on this basis.

I used each package on several drives and compared the results.

TESTING: DIFFERENT SOFTWARE, DIFFERENT RESULTS

In a preliminary comparison, I tested one old CMI drive with both DTA (another version of DT, Disk Technician Advanced, which is functionally equivalent, slightly more automated—and expensive) and NDD. That drive was sold to me as rebuilt, but Norton quickly revealed that it was full of software and corruption. Such a revelation almost certainly indicated that the drive was in use for some time since it had been serviced (assuming it ever was serviced). Needless to say, this drive is an ideal, and frequent, candidate for resurrection.

I used Norton first. Disk Doctor flagged nearly an entire cylinder that it couldn't read. When a read failed, NDD asked if it should move the data and, when instructed, attempted to move it to a safe area. Many of the sectors were garbled in the move, and Norton didn't detect the corruption.

Then I ran DTA on the same drive. It returned most of the sectors that Norton had

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- Fuji 386-SX Mono Fileserver 4MB Memory w/80MB HD
- 3 Fuji 286-12 Mono w/640K workstation

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- ELS level II
- Fuji 386-SX Mono Fileserver 4MB Memory w/80MB HD
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- Both system prices include ELS software and netware installation on fileserver
- Optional 386-20 & 386-25 fileserver upgrading available • Complete service for testing

TEAC 23ms 42MB Hard Disk Systems

42MB Fuji 386-25 Cache System w/1MB Memory

PC MAGAZINE BEST BUY February 13, 1990

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Fuji Systems w/1MB:

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- 200W Enhanced Power Supply & AT Case
- 101 Enhanced Click Keyboard
- 42 MB 23ms Hard Disk

42MB Fuji 386-SX System w/1MB Memory

CPU = SX 16MHz
BIOS = AMI
LANDMARK = 20.6
NORTON SI = 17.1
MIPS = 1.93

$979

42MB Fuji 386-20 System w/1MB Memory

CPU = 20MHz
BIOS = AMI
LANDMARK = 26.40
NORTON SI = 22.50
MIPS = 2.59

$1309

42MB Fuji 386-25 System w/1MB Memory

$1339

42MB Fuji 286-12 System w/1MB Memory

CPU = 12MHz
BIOS = AMI
LANDMARK = 16.00
NORTON SI = 14.30
MIPS = 1.67

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42MB Fuji 286-16 System w/1MB Memory

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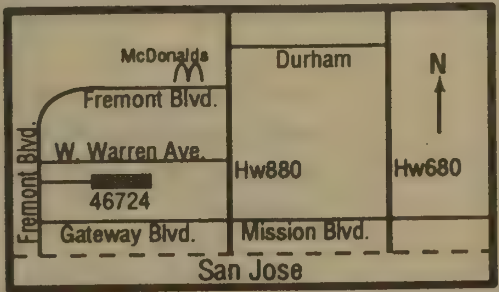

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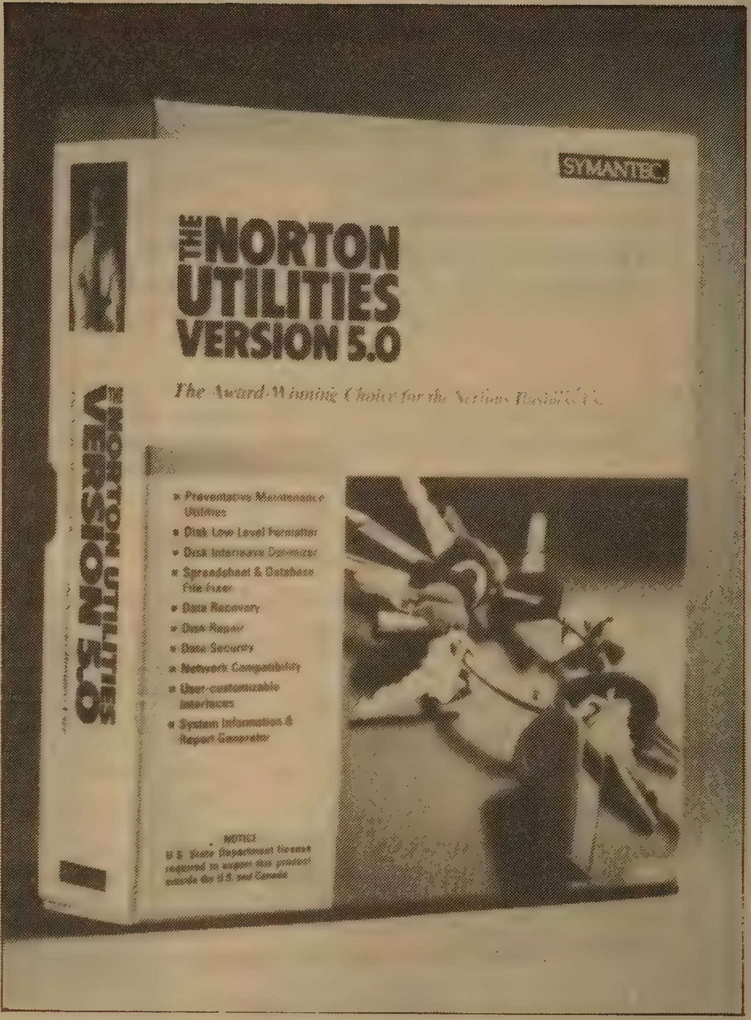
removed as defective. Furthermore, they were returned in a condition that Norton would no longer flag. The key difference was that DTA first attempted to reformat a track before flagging it. Norton can do a non-destructive low-level format, but the process is on a separate menu and not performed as part of its test. DTA does it automatically and never moves data unless the track recovery fails. And DT reports possible corruption of moved files.

SpinRite *does* do a format before testing, and does it on every track whether it's necessary or not. However, SpinRite is less conservative than DTA. On the CMI 20Mb drive, SpinRite detected two new weak areas which had developed in the months since the last DTA test. However, it also returned to service 21 sectors which had been flagged by DTA. A test by DT, run immediately after SpinRite, removed a total of 19K which SpinRite had just given a clean bill of health. DTA had likewise flagged many sectors that Norton accepted as good.

Ironically, one of two suspect ASCII files which DTA moved to new clusters was SpinRite's own activity log. If a program will put its log into a suspect area, however tenuous the suspicion, I am reluctant to entrust precious data to it. However, that is not to say that Gibson is wrong and DTA is right. Both files which DTA moved, and recommended replacing, appeared to be sound upon casual inspection. If either had been a binary file, a much stronger test would have been available.

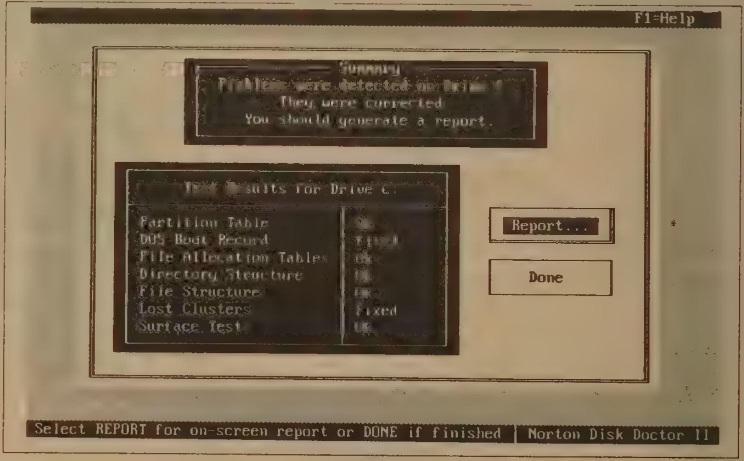
NDD and DTA performed almost equally well on several reliable Priam drives. None of these drives required restoration. However, Norton would not work with logical devices created by the partitioning software for these large drives. It may not work with other partitioning software either.


SYMANTEC
THE NORTON UTILITIES VERSION 5.0
The Award-Winning Choice for the Nation's
THE NORTON UTILITIES VERSION 5.0

Now in version 5.0, the Norton Utilities package includes Disk Doctor.

SpinRite II v1.0 does not work with Priam's partitioning software before v5.0, or with certain other proprietary partition types (all are well documented). It does work with most, including software such as Golden Bow's V-feature Deluxe and Ontrack's Disk Manager, which can be used to partition Priam drives.

A Seagate ST225 fared much worse for all test programs. However, here SpinRite and Norton may have had a slight advantage. Both attempted to make repairs. Although they failed to restore the drive, they made certain improvements that could be critical under certain circumstances. DTA has consistently refused to attempt a repair of this drive as too unreliable. However, Gibson repaired some FAT defects before it failed. Both Gibson and Norton eventually locked up during their rescue attempts and required a cold boot.



```
Summary
Problems were detected on Drive C
They were corrected
You should generate a report.

Test Results for Drive C:
Partition Table             OK
DOS Boot Record             Fixed
File Allocation Tables      OK
Directory Structure         OK
File Structure              OK
Lost Clusters               Fixed
Surface Test                OK

Select REPORT for on-screen report or DONE if finished | Norton Disk Doctor II
```

Disk Doctor provides an easy-to-use interface and corrects a wide range of disk problems.

In one way, Gibson agreed exactly with DTA. Both chose a new interleave of 2, up from the original factor of 3, thereby improving the CMI's performance.

DTA is designed to automatically repeat tests at periodic intervals. It accumulates statistics across all these tests in a failure-pattern database. The statistics are used to detect sectors which are becoming weak well before they fail. Sectors are even compared to those in adjacent areas to determine if an

Continued on page 118

DISK TECHNICIAN $99.95

Disk Technician Advanced (includes auto head-park-utility SPA): $149.95

Prime Solutions, Inc.
1940 Garnet Ave.
San Diego, CA 92109
(800)847-5000
(619)274-5000

NORTON DISK DOCTOR 4.5 (NORTON UTILITIES) $179

Norton Computing
100 Wilshire Blvd. 9th floor
Santa Monica, CA 90410
(213)319-2016

SPINRITE II $89

Gibson Research
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Laguna Hills, CA 92653
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- * Standard System Features plus:
- * 80286 Processor running at 12 MHz
- * 512 KB RAM Standard (Expandable to 4 MB RAM)
- * 0 Wait State Performance for 16 MHz Effective Throughput
- * Landmark = 16.0 MHz - Norton SI = 15.4x
- * AMI BIOS with MS-DOS, Novell & Windows Support

* for 1 MB RAM, add $50

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286/12 System Features, Hard Drive, Monitor & Video Card

Hard Drives: MB/Ms	20/40	42/32	65/32	80/18	105/18
No Video	$599	$649	$749	$949	$1,049
Mono	$699	$749	$849	$1,049	$1,149
VGA-Mono	$824	$874	$974	$1,174	$1,274
SVGA	$1,049	$1,099	$1,199	$1,399	$1,499
Hires	$1,199	$1,249	$1,349	$1,549	$1,649

286/12 Super VGA System *$999*

- * 286/12 Standard System with 1 MB RAM
- * 20 MB Hard Disk w/40 ms Access Time
- * High Performance 16-bit VGA Graphics Card
- * 14" Color Super VGA Monitor with 800 x 600 Resolution

For 42 MB Hard Disk, add $50

386SX/16 Standard System *$599*

Standard System Features plus:

- * Intel 80386SX Processor running at 16 MHz
- * 1 MB RAM Standard (Expandable to 8 MB RAM)
- * 0 Wait State Performance for 21 MHz Effective Throughput
- * Landmark = 21.0 MHz - Norton SI = 18.4x
- * AMI BIOS with MS-DOS, OS/2, XENIX, UNIX, Novell, Windows & 386-Specific Software Support

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Standard System Features plus:

- * Intel 80386DX Processor running at 25 MHz
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* for 64 KB Cache, add $200

* Landmark = 45.9 MHz - Norton SI = 39.6x

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for 64 KB Cache, add $200

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Mono	$1,349	$1,449	$1,649	$1,749	$2,049
VGA-Mono	$1,474	$1,574	$1,774	$1,874	$2,174
SVGA	$1,699	$1,799	$1,999	$2,099	$2,399
Hires	$1,849	$1,949	$2,149	$2,249	$2,549

386/25 Super VGA System *$1,649*

- * 386/25 Standard System
- * 42 MB Hard Disk w/32 ms Access Time
- * High Performance 16-bit VGA Graphics Card
- * 14" Color Super VGA Monitor with 800 x 600 Resolution

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Standard System Features plus:

- * Intel 80386DX Processor running at 33 MHz
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- * 64 KB Static RAM Cache for Increased Performance
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- * Landmark = 56.0 MHz - Norton SI = 45.9x
- * AMI BIOS with MS-DOS, OS/2, XENIX, UNIX, Novell, Windows & 386-Specific Software Support

MICROCOM 386/33C

386/33C System Features, Hard Drive, Monitor & Video Card

Hard Drives: MB/Ms	42/32	65/32	80/18	105/18	205/18
No Video	$1,649	$1,749	$1,949	$2,049	$2,349
Mono	$1,749	$1,849	$2,049	$2,149	$2,449
VGA-Mono	$1,874	$1,974	$2,174	$2,274	$2,574
SVGA	$2,099	$2,199	$2,399	$2,499	$2,799
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486/25C, System Features, Hard Drive, Monitor & Video Card

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Mono	$4,649	$4,749	$5,049	$5,799	$6,799
VGA-Mono	$4,774	$4,874	$5,174	$5,924	$6,924
SVGA	$4,999	$5,099	$5,399	$6,149	$7,149
Hires	$5,149	$5,249	$5,549	$6,299	$7,299

486/25C Hires System *$5,399*

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- * 205 MB Hard Disk w/Quick 18 ms Access Time
- * High Performance 16-bit 512K VGA Graphics Card w/1024 x 768 Capability
- * 14" Color Hi-Res VGA Monitor with 1024 x 768 Resolution and 0.28 dot pitch

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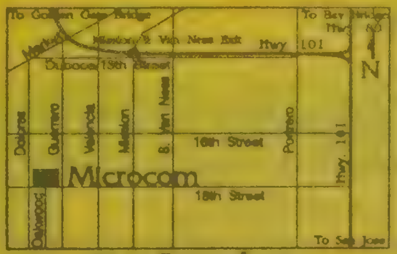

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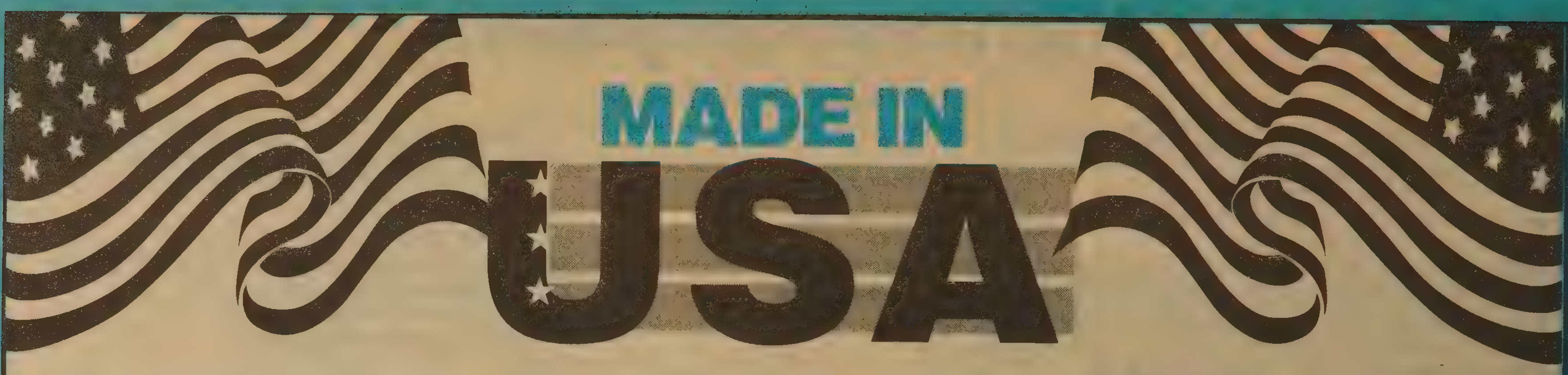

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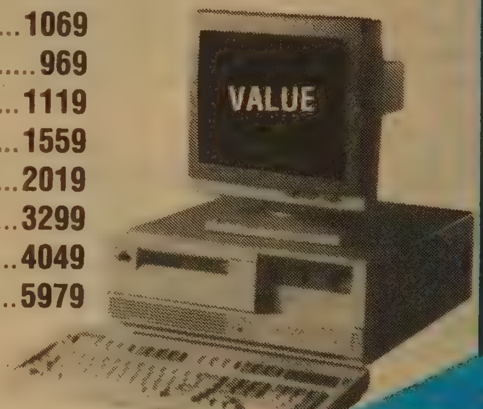

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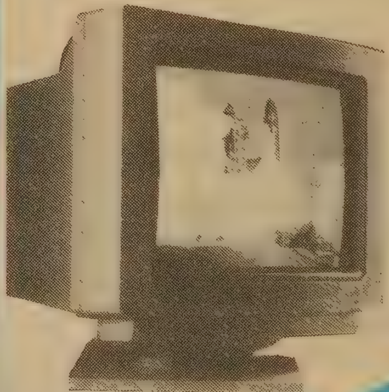

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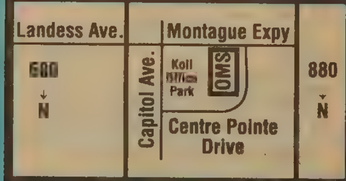

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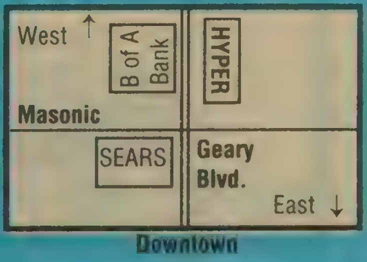

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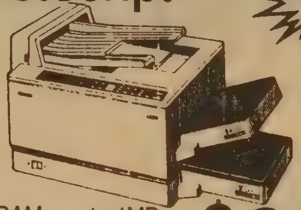

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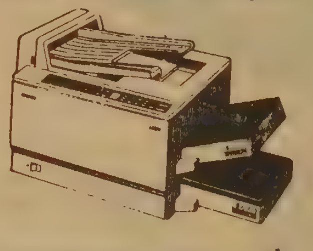

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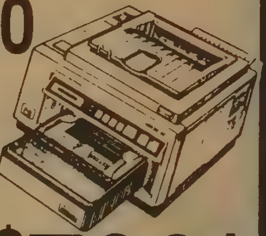

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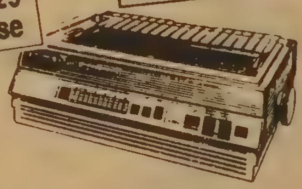

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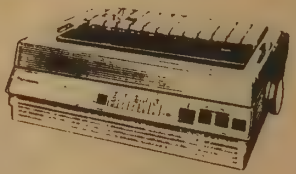

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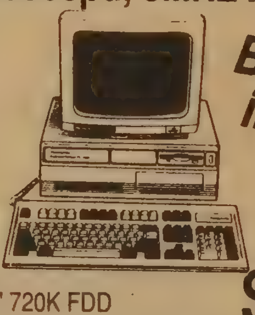

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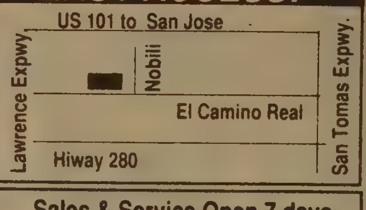

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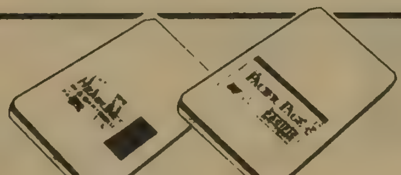

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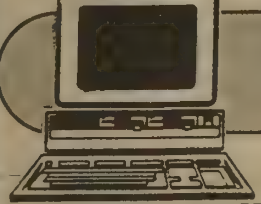

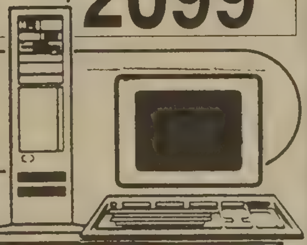

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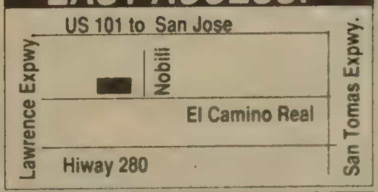

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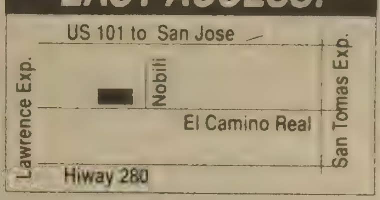

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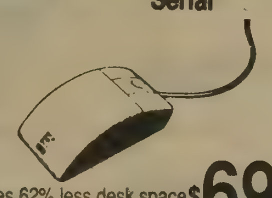

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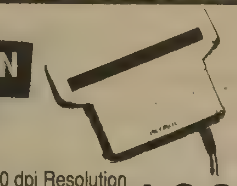

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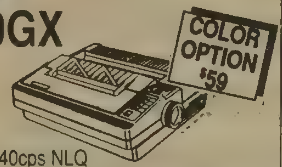

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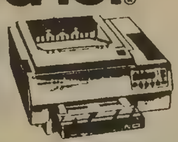

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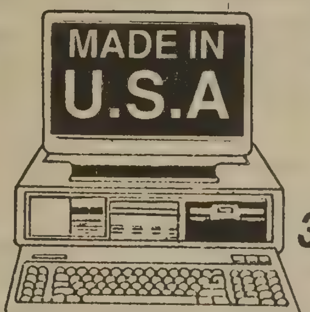

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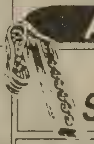

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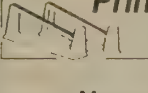

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Continued from page 110

area of the disk is becoming bad. Prime Solutions claims that insidious defects which appear over time should almost always be detectable before they lead to major data losses.

There is no provision in SpinRite or NDD for automatically tracking and using information on progressive degradation. In fact, due to the less conservative nature of their tests, defects may begin to develop within minutes or hours after the format. I prefer to sacrifice a little more storage rather than risk invaluable data.

Prime Solutions and Gibson both provide informative documentation. However, Gibson uses misleading terms such as "surface scrubbing" (for operations in which there is no physical contact). He may have been thinking of engine repair when he wrote "cylinder head" instead of "head" for his on-screen report. Such usage does smack of clever marketing, but it does not lead to the better understanding that Prime Solutions imparts.

CONCLUSIONS

There is one area where DTA may not perform as well as others in its category. Due to its reliance on the operating parameters of a computer's disk controller, the program is more hardware dependent than competing software. Norton and Gibson may work with some systems with which DTA can't.

Because of its conservatism, though, I feel DT is clearly a superior solution for systems with standard controllers. If I could only have one such utility, DTA would be it.

But if you demand the utmost in repair utilities, then you will want to have more than one of these. Until one program demonstrates the ability to do everything the others do, I would recommend both DTA and SpinRite as a minimum. Furthermore, Gibson's own telephone support staff recommended Norton's Disk Doctor for repairing FAT chains before running SpinRite II on drives with a damaged FAT. So owning all three wouldn't be a bad idea. ■

Until one program demonstrates the ability to do everything the others do, I would recommend both DTA and SpinRite as a minimum—and Gibson's own telephone support staff recommended Norton's Disk Doctor in some situations.

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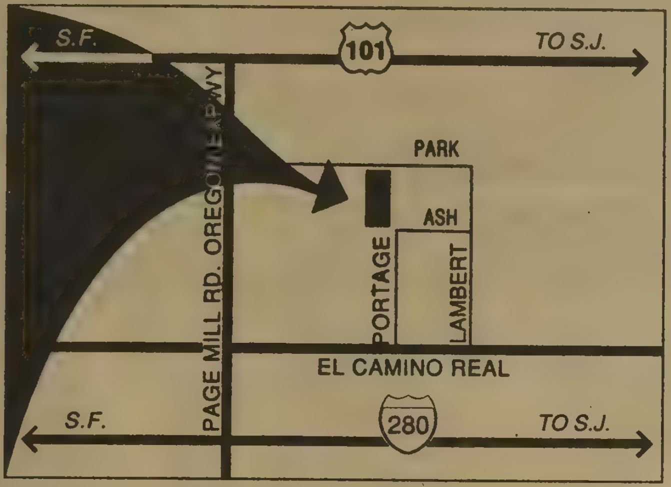
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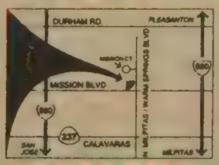
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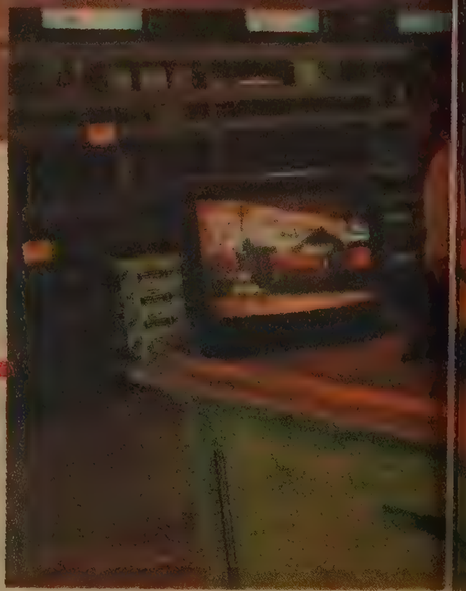

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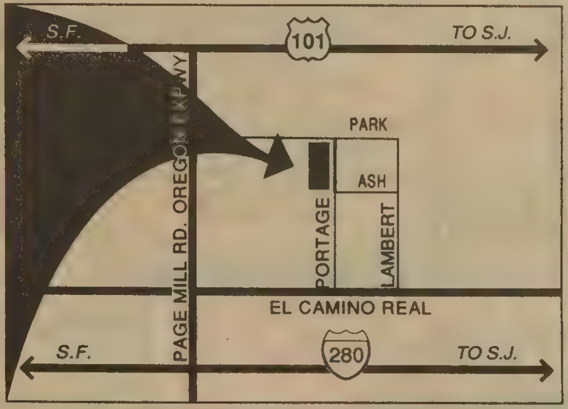
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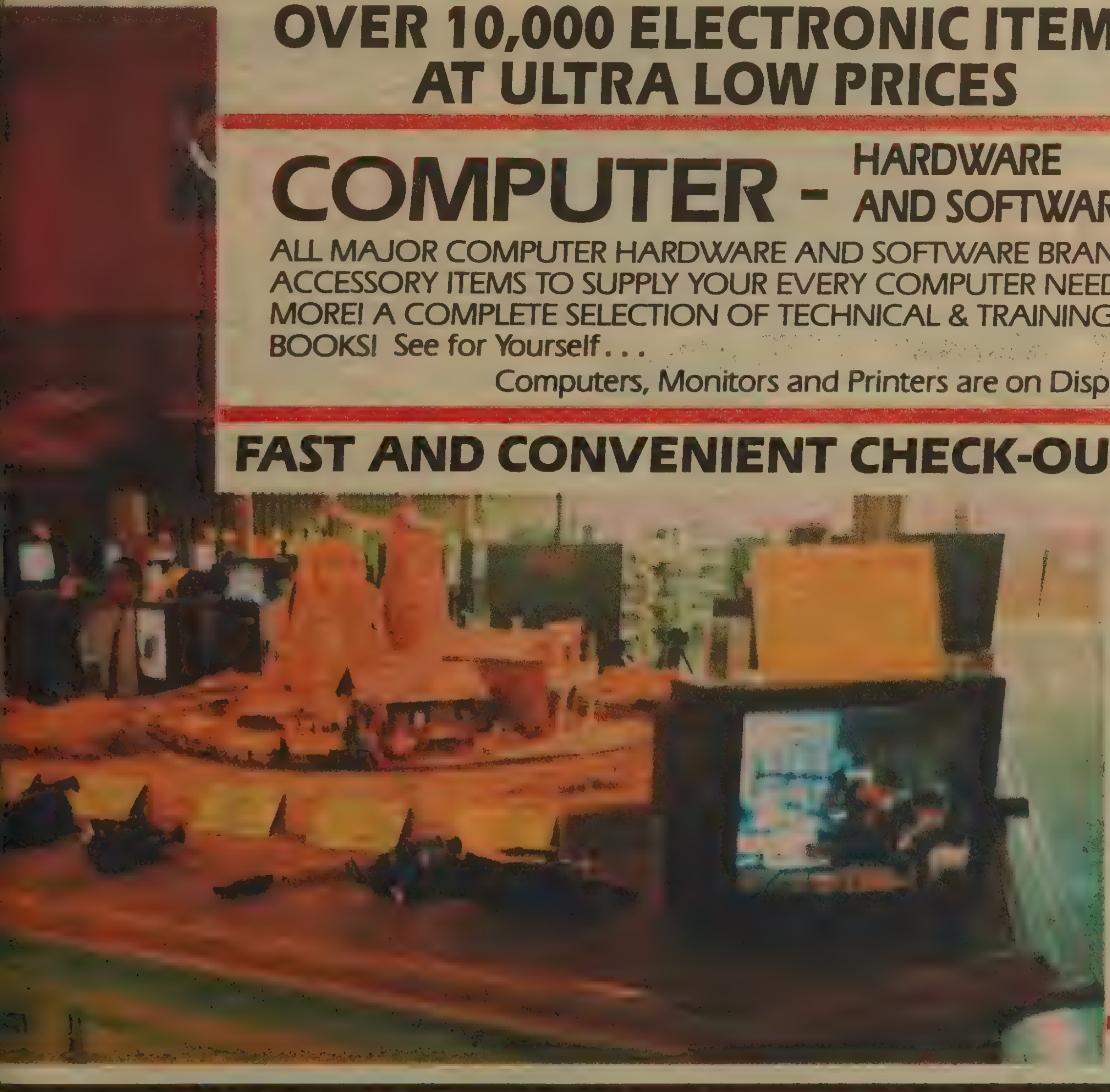

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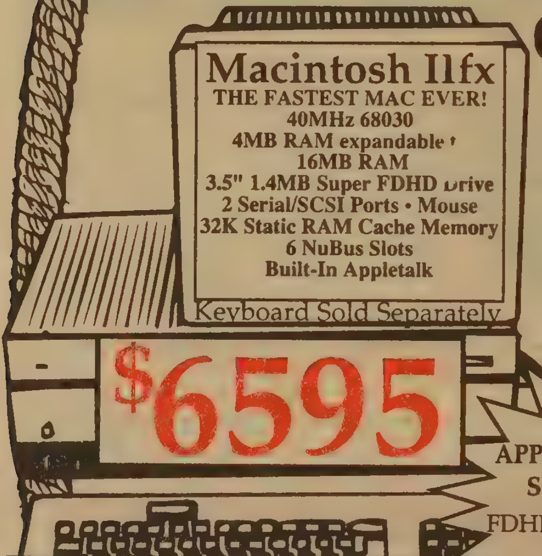

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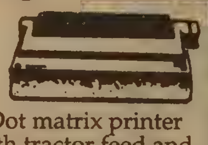

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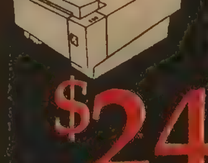

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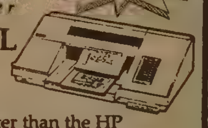

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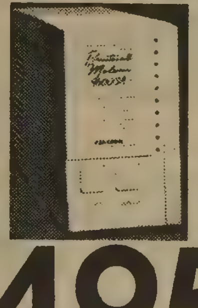

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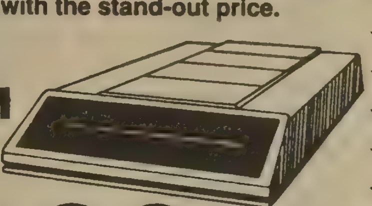

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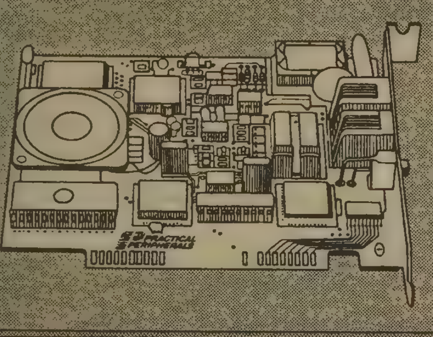

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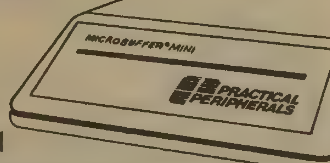

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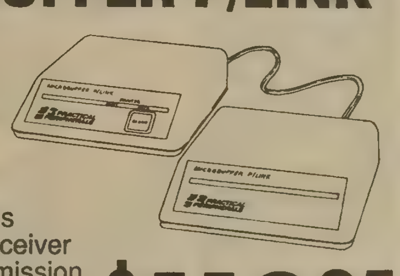

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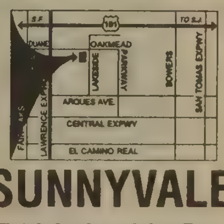

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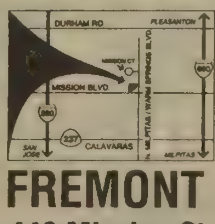

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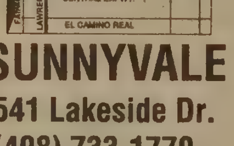

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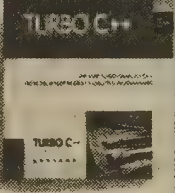

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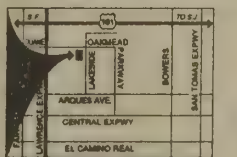
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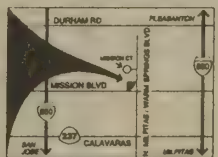
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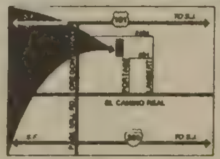
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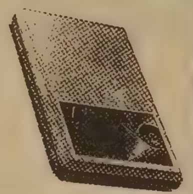

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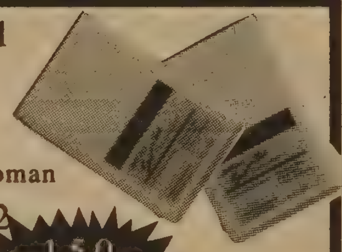

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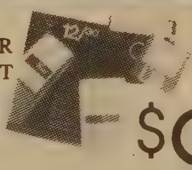

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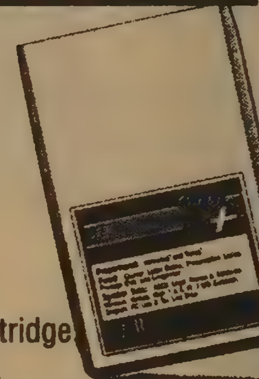

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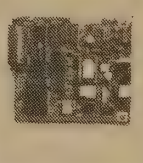

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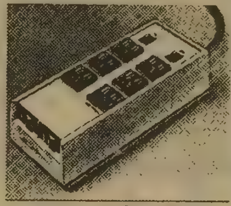

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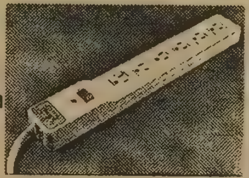

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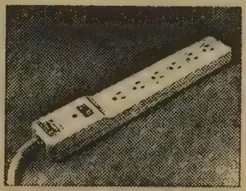

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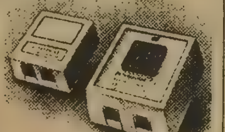

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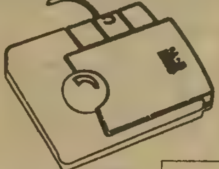

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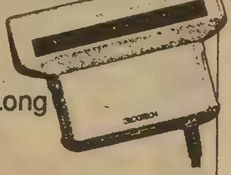

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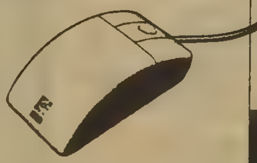

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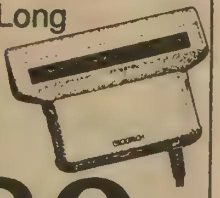

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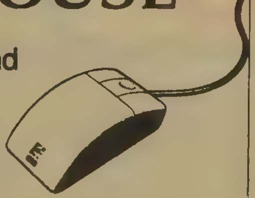

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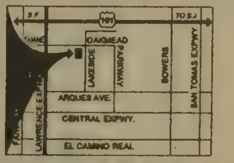

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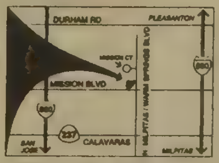

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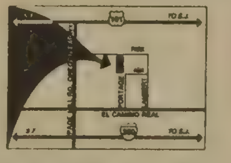

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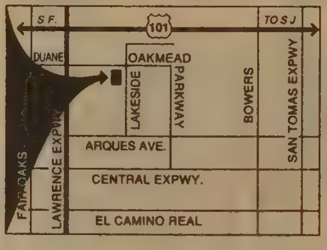

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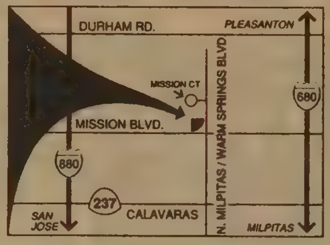

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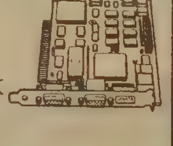

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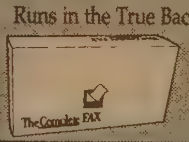

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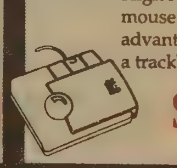

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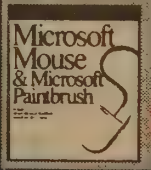

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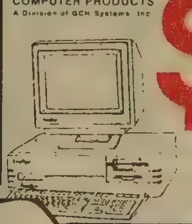

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ZENITH data systems *SX Appeal*
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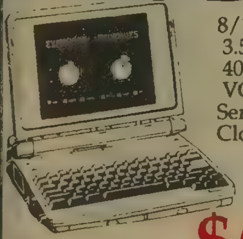

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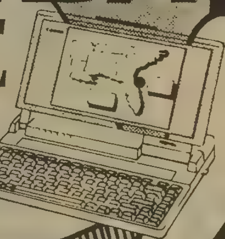

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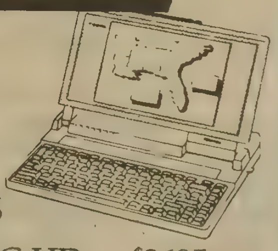

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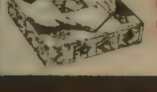

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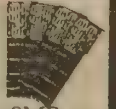

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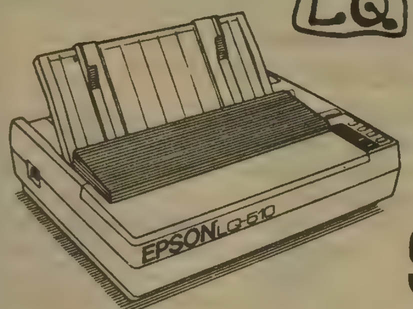

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23x9 Character Matrix
Tractor Feed • 80 Columns

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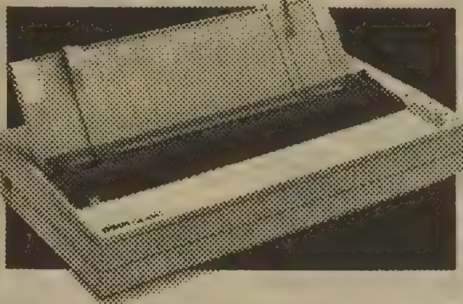

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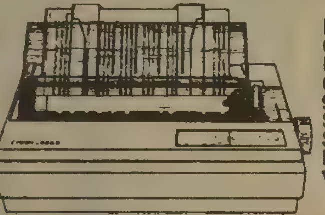

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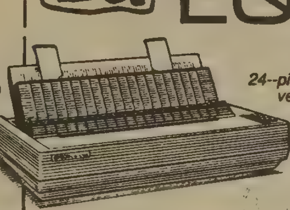

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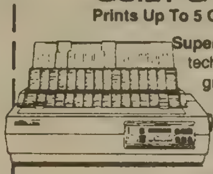

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Prints 400 CPS Draft
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One Year Limited Warranty.

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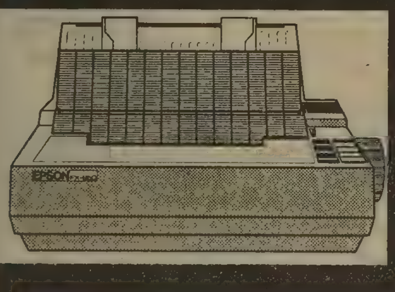

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SmartPark Features • Tractor Feed
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LX LX-810

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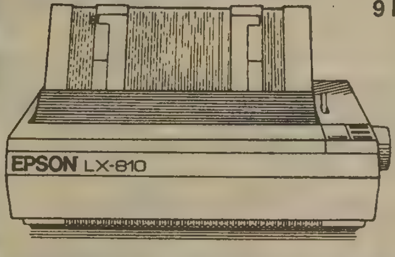

9 Pin • 80 Column • 200 CPS Draft • 30 CPS NLQ
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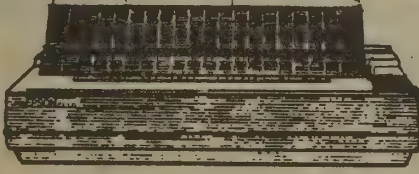

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54 CPS NLQ • SelecType • SmartPark Features
Push Feed Tractor • Opt. Cut Sheet Feeder
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High resolution graphics!

Prints 1066 CPS in SuperDraft Mode • Advanced SmartPark Paper Handling
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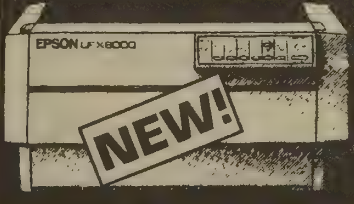

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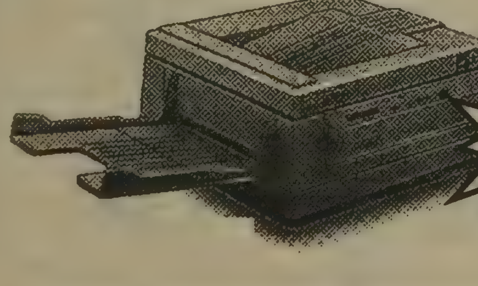

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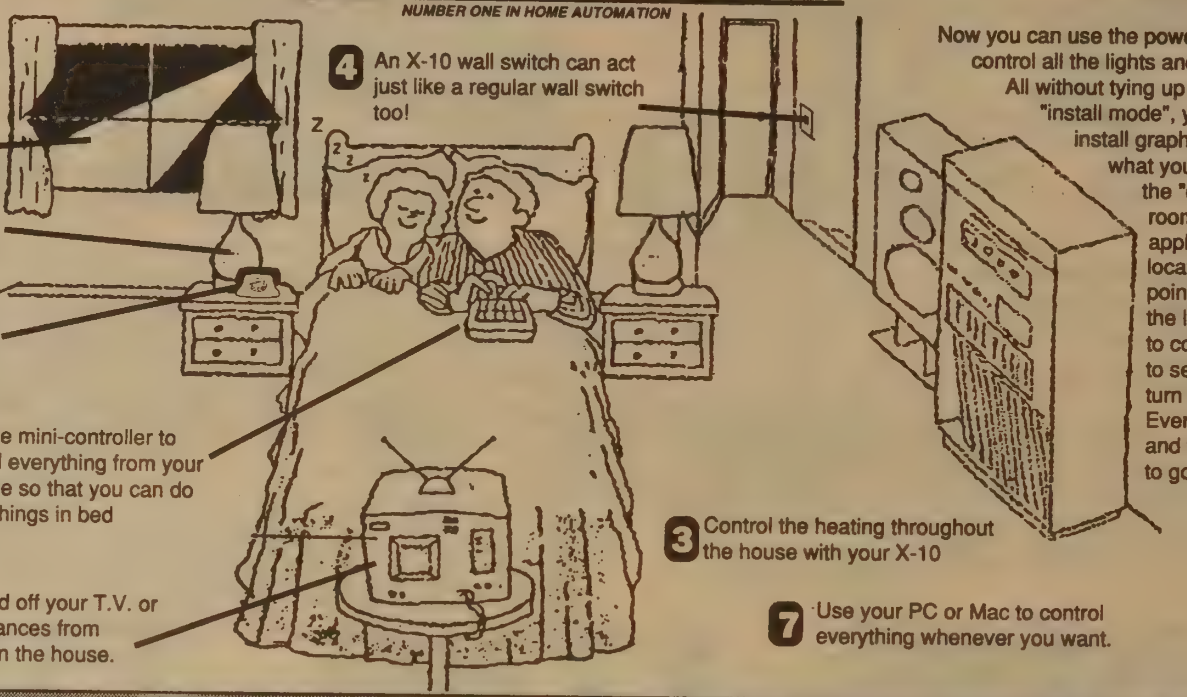

4 An X-10 wall switch can act just like a regular wall switch too!

8 Turn lights on from outside house

2 Dim your lamps from anywhere in the house

5 Use the telephone to control your lights and appliances before you get home.

6 Use the mini-controller to control everything from your bedside so that you can do other things in bed

1 Turn on and off your T.V. or other appliances from anywhere in the house.

3 Control the heating throughout the house with your X-10

7 Use your PC or Mac to control everything whenever you want.

Now you can use the power of your computer to control all the lights and appliances in you home! All without tying up your computer. In the "install mode", you select a room in which to install graphical icons which represent what you want to control. Then in the "operate mode" you select a room in which the light or appliance you wish to control is located. You use the joystick to point to the icon representing the light or appliance you wish to control. Then point and click to select whether you want to turn on or off, Today, Tomorrow, Everybody or on a Specific Day and then set the time you want it to go on or off.

1 APPLIANCE MODULE

Receives signals from the timer or mini-controller to turn on or off a TV, air conditioner, stereo and other appliances anywhere in the house.

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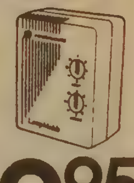
AM466

2 LAMP MODULE



Receives signals from the timer or mini-controller to turn lamps on and off anywhere in the house. Full range dimming is possible from X-10 manual controllers.

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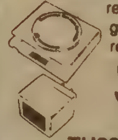
LM465

3 THERMOSTAT SETBACK CONTROLLER

Mounts on the wall under your existing thermostat & plugs into the appliance module. Works with any thermostat so you can automatically set back heating or air conditioning using the timer, or remotely turn up heat/a.c. before you get home using the telephone responder.



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TH2807

4 WALL SWITCH MODULE

This replaces your ordinary wall switch so that you can control any of the outlets in the house, without any extra wires.

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5 TELEPHONE RESPONDER

Controls your lights and applications from any telephone, wherever you are! Transmit control signals with your 3 digit security code to control up to 8 lights and appliances.

New Model! allows for Bypass of answering machine

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TR551

6 MINI CONTROLLER

Instantly control up to 16 lights & appliances throughout the house with the push of a button from one convenient location. lets you "group together" lights to dim or turn on.

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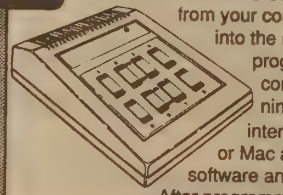
SL503

7 COMPUTER INTERFACE



The Home Control Interface is a very sophisticated timer which is programmed from your computer and then disconnected. Simply plug lamps and appliances into the modules. Program different events for different days. You can even program your lights to dim at a predetermined time. If you don't have a computer at home, you can program the interface at work, pop in a nine volt battery and bring the Powerhouse into your home! The interface is available for IBM or Mac and comes complete with software and connecting cable. After programming, it can be disconnected, to free up the computer for everyday uses.

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8 HOME SECURITY SYSTEM

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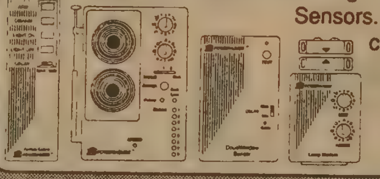
The *Protector Plus* is a "wireless" home security system. You arm and disarm the system with a Wireless Remote control. It installs in minutes and requires no tools or wiring. You can install up to 16 Door/Window Sensors. These sensors are "supervised", i.e. self-checking.



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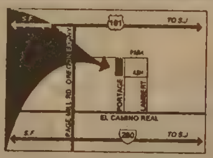

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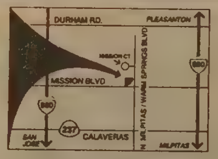

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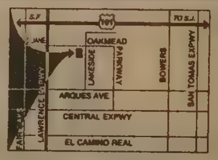

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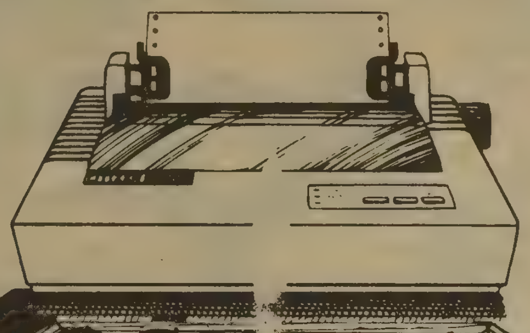
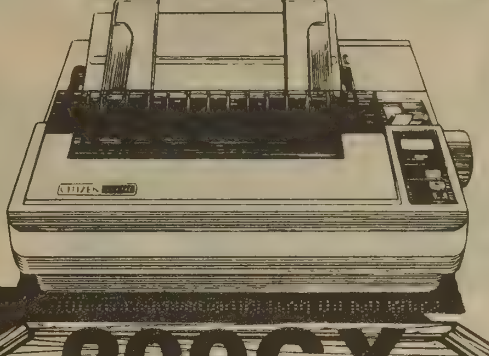


GSX-140

- 192 cps draft speed, 64 cps letter quality
- Epson LQ2550, IBMX24 Proprinter compatible
- Command-View display panel gives you complete control of over 75 functions from the front panel, and allows you to set up MACPROS's that make the GSX-140 four printers in one
- Convertible push/pull tractor
- Bottom feed, Paper parking
- Top-of-Form feature, continuous paper tear-off feature
- 8K Buffer-expandable to 40K
- Four resident fonts
- Two-year warranty
- Optional snap-in Color On Command kit available
- Color option for CTZ-200GX, CTZ-GSX-140

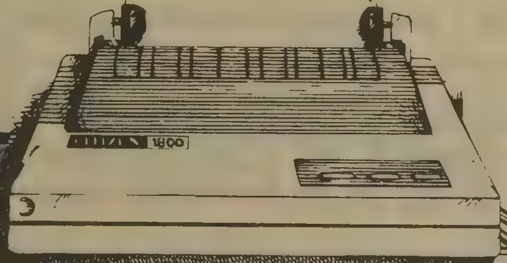
$399



200GX

- 9-pin narrow carriage color dot matrix printer
- 213 CPS draft speed, 40 CPS letter quality
- Epson FX-850, IBM Proprinter compatible
- Command-View II menu switch controls over 25 features
- Convertible push/pull tractor
- Bottom feed, paper parking
- Top-of -Form feature, continuous paper tear-off feature
- 8K Buffer
- Five resident fonts
- Envelope printing
- Two-year warranty
- Optional snap-in Color On Command kit available

$239

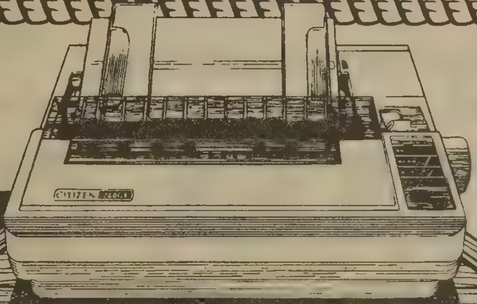


120D

You can tell the Citizer)D dot matrix printer is extraordinary the first time you s· 's sleek, modern design. The first time you see it's print q ty-the best in it's class. Everytime you see it's rugge ouilt-to-take-it dependability.

You'll also apprecia· the 120D's 120 CPS draft and 25 CPS correspondence-quality throughput. IBM and Epson compatability. Extreme ease of use. And full one-year warranty. The Citizen 1 D. It's the best price/performance buy available. And tl nakes it anything but ordinary.

$159



180D

The new Citizen 180D dot-matrix printer is the ideal administrative assistant. It's very compatible. Works with all popular software.

It's extremely versatile. With a built-in, variable-width tractor as well as rear or bottom feed to handle any assignment.

And the 180D is fast on it's feet. Able to automatically load paper and zip through rough drafts at 180 CPS..

Or with a flip of a switch, knock out data processing at 150 CPS or correspondence-quality print at 29 CPS. With all these qualifications, a 12-month warranty and an affordable price tag, what more could you ask for? Sorry, you'll have to get your own coffee.

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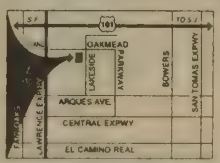
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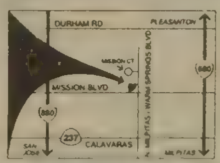
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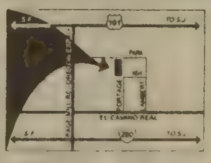
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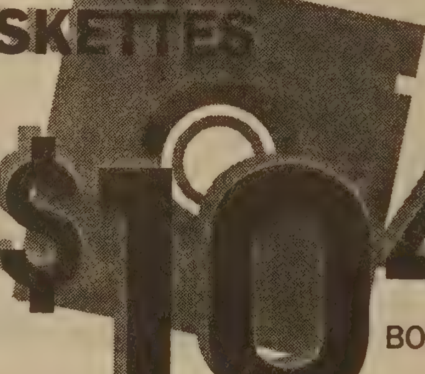

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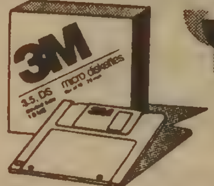
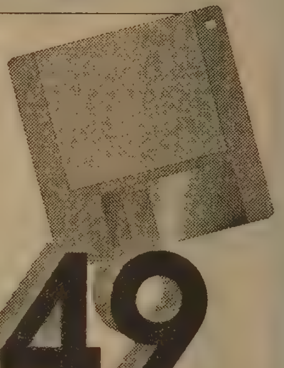
BOX OF TEN

5.25" DS/HD Formatted $\$12^{29}$

3.5" DS/HD DISKETTES


3M
micro diskettes
3.5 DS



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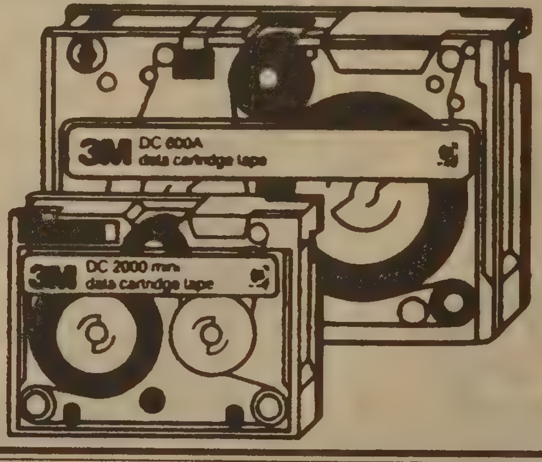
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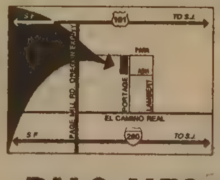
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TO S.J.
PAGE MILL RD. OREGON EXPWY
PARK
ASH
PORTAGE
LAMBERT
EL CAMINO REAL
S F
280
TO S.J.

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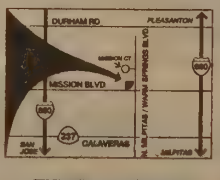
DURHAM RD
PLEASANTON
MISSION CT
MISSION BLVD.
N. MILPITAS / WARM SPRINGS BLVD.
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880
237
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SAN JOSE
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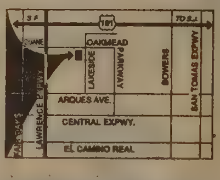
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101
TO S.J.
DUANE
OAKMEAD
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PARKWAY
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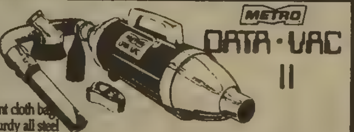

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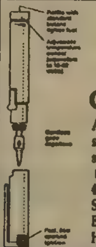

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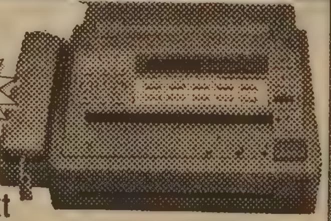

If your needs include sending five pages of text at one time, Fine text sending and receiving ability, don't go broke! Do it with this quality Fax machine for just. . . .

MODEL FAX 1000 $349

NovAtel BAGPHONE

For the on the go individual, a Cellular Phone is a must, and Novatel makes it affordable. This phone has a 9 number Auto dialer, and operates on a 12 volt cigarette lighter in your car. With the optional battery, you can be completely portable! $329

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10 Page Automatic Document Feeder, Dial Card system Allows 60 Station Auto Dialer. Delayed Send Mode, Half Tone Transmission, G3, Standard and Fine Transmission $598

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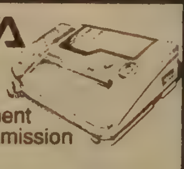
A paper cutter is a luxury if you receive several Fax documents. Why spend hours cutting up Fax paper yourself when the Epson Fax 1000 will do it for you!

ORIGINALLY $649 $449

MURATA



Murata Quality with a 5 page document feeder and fine transmission mode and...only

MODEL M-900 $399

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Epson has really done it this time! This incredible unit features a 5 page document feeder, automatic cutter and 16 shade halftone for the unbelievably low price of...

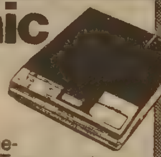
MODEL FAX 2000 $548

SONY DIGITAL ANSWERING MACHINE

This answering machine is selling for less than half of what we sold it for originally. Limited stock, one per customer.

MODEL TAU-10 $\$59^{95}$

Panasonic AUTO-LOGIC ANSWERING SYSTEM



•Auto-logic operations for one-touch message playback • Tone remote control system for OMG skip, OMG record, remote turn on/off, memory playback, and room monitoring •Voice synthesized announcements for time, AM/PM, voice remote menu, number of calls, and time /day stamp on each ICM

Dual Outgoing Messages

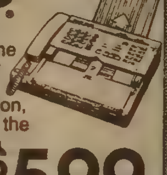
MODEL KXT-1470 $\$99^{95}$

MURATA

If simple is better for you, this unit is simply the right choice. The Auto Cutter will separate incoming documents and it even has a 5 page automatic document feeder!

MODEL M-1100 $599

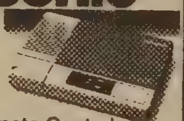
SHARP



With Sharp, you can't go wrong. This Fax Machine has all of the most popular features! It has a 10 page feeder, halftone transmission, even a paper cutter, all for the new low price of...

MODEL FO-215 $599

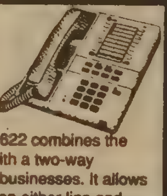
Panasonic EASA PHONE



Answering system with Auto-Logic Operation, Tone Remote Control, Digital Display, Message Memo Recording and Remote turn on, Auto-Logic Operation Automatically Rewinds, Plays Messages, Stops at the Last Message and Resets itself at the Touch of One Button $39

MODEL KX-T1000

AT&T



The AT&T Memory Telephone 622 combines the function of two-line telephone with a two-way speakerphone perfect for small businesses. It allows group telephone conversations on either line and can combine conversation from each of the separate lines. Additional features include sixteen number speed dialing, programming pause, hold, line status indicator, speakerphone and receiver volume control, flash and last number redial.

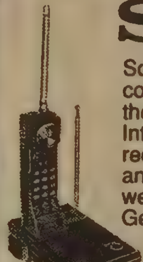
MODEL 622 $\$89^{95}$

Panasonic

Because you have 2 incoming lines, does'nt mean you have to have 2 cordless phones with Panasonics's KXT-3880. Get yours now for just...

MODEL KXT-T3880 $\$139^{95}$

SONY



Sony's most popular cordless phone has all the right features. Intercom, digital noise reduction, speaker phone and a one week standby! Get yours now!

MODEL SPP-170 $199

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Panasonic TRANSPORTABLE CELLULAR TELEPHONE

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- Stay Alive Function
- 40 Telephone Number Memory
- Visible Signal Strength Meter
- Dual Low Battery Warning

MODEL TP-500

MODEL TP-500 $548

MOTOROLA TRANSPORTABLE HANDHELD CELLULAR TELEPHONE

GTE Mobilnet

Motorola's most popular Hand Held Phone has all the right features! This compact unit will allow you to talk for up to 90 minutes, keep 30 numbers in memory, and much more! $567

MODEL 8000HX

MITSUBISHI TRANSPORTABLE CELLULAR TELEPHONE

INTERNATIONAL CORPORATION

If it's features you want, features the 800 has! Keeps your 100 most frequently dialed numbers and redials busy numbers automatically. For most phones, hands free requires an external kit with installation required. Not this phone! All you need, for hands free is a microphone that we have in stock!

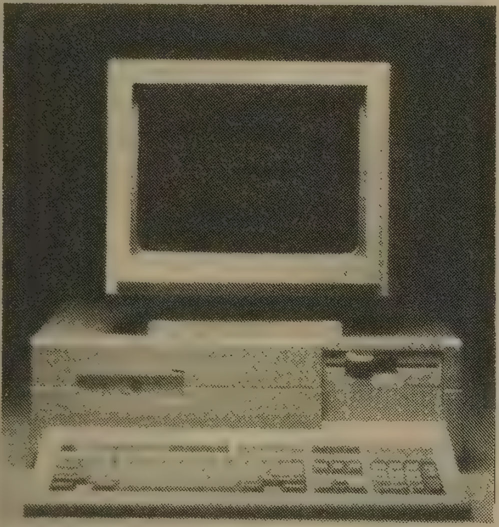
MODEL 800 TPK $698

PRODUCT SPOTLIGHT

New Products

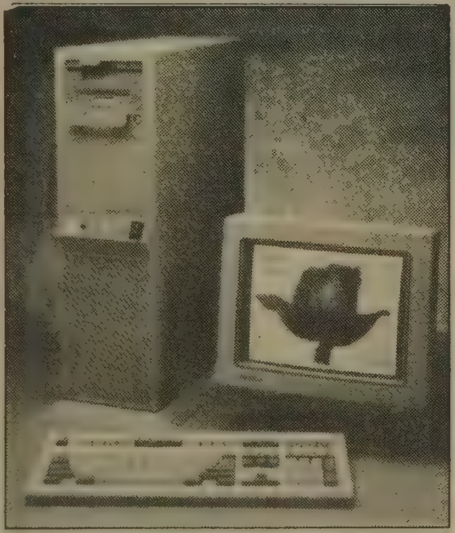
NETWORKS

SAMSUNG ANNOUNCES THE 386A3 FILE SERVER



The Samsung 386A3 is a 33MHz 80386-based file server designed for large networks, high-volume LAN applications, large databases and advanced applications, such as CAD and CAD image libraries. It is fully compatible with Samsung's SE2100 and SE2200 LAN Ethernet interface cards, as well as Novell-certified compatible with all versions of NetWare. The 386A3 includes 4Mb RAM, expandable to 16Mb with the use of a memory upgrade board. It also features eight expansion slots, one 32-bit and seven 16-bit. ($6499) Samsung Information System America, Inc., 3655 North First St., San Jose, CA 95134. 1-800-446-0262.

ROSE HILL FILE SERVERS



Two low-cost, high-performance fault-tolerant file servers from Rose Hill Systems offer a solution to users that requires one hundred percent disk drive fault tolerance for network and system-critical applications. These two systems, the FTS-30 and FTS-80, are designed to optimize Novell NetWare software. This translates into higher caching capabilities, thus reducing the need for extended memory on the file server motherboard. This design also enables the FTS systems to utilize a duplexing, rather than mirroring, storage technique. Rose Hill Systems, Inc., 4865 Scotts Valley Dr., Scotts Valley, CA 95066. (408)428-3871.

MIX-AND-MATCH ON THE CORVUS NETWORK SERVER

Corvus Systems has introduced new software, Omnishare, that allows networks using the Constellation

PRODUCT UPDATES

- **Aladdin Systems, Inc.** is offering **Stuffit Deluxe 1.0,** a Macintosh compression software package. New features include use of multiple compression methods, ultra-fast encryption methods, graphic and sound compression, virus detection functions, and the Unstuffit Deluxe utility. Contact: Aladdin Systems, Inc., Deer Park Center, Suite 23A-171, Aptos, CA 95003. (408)685-9175.

- **Concept Development Systems, Inc.** has released an update for **Sparkle**. Version 3.0 allows bridged networks to share resources on a connected local area network, and provides support of intelligent multiport boards. Contact: Concept Development Systems, Inc., Barrett Pkwy., 14-206, PO Drawer 1988, Kennesaw, GA 30144. (404)424-6240.

- **eSoft, Inc.** is releasing **Data Base System (tdbs) v1.1,** a modular upgrade of its integrated multiuser information management system. Contact: eSoft, Inc., 15200 E. Girard Ave. Suite 2550, Aurora, CO 80014. (303)699-6565.

- **Klynas Engineering** is releasing **Streets on a Disk v4.0.** New features include faster searches for street names and addresses, ability to display all scanned images or other PCX files, new menus, a View command that lets the user display and save up to 15 different screens. Contact: Klynas Engineering, PO Box 499, Simi Valley, CA 93062. (805)583-1029.

- **Irwin Magnetic Systems, Inc.** has announced Release 2.1 of EzTape, its tape backup software. **EzTape 2.1** provides full LAN backup, and expanded support for QIC-38 and QIC-02 tape drives. Registered users of Release 1.1 may obtain upgrades directly from Irwin Customer Service. Contact: Irwin Magnetic Systems, Inc., 2101 Commonwealth Blvd., Ann Arbor, MI 48105. 1-800-421-1879.

- **The Lan Support Group, Inc.** has released **BindView v2.1,** a new version of its diagnostic/reporting tool for Novell NetWare. New features include the ability to generate File Server Reports, User Configuration and Resource Utilization Reports and User Group Reports. Contact: The LAN Support Group, Inc., 520 Post Oak Blvd., Suite 100, Houston TX 77027. (713)621-9166.

- **Novell, Inc.** has released **NetWare 386 v3.1.** This update offers numerous improvements, including open server APIs, increased reliability, architecture for multi-protocol use, enhanced LAN support, and unprecedented third-party certified support. Contact: Novell, Inc., 122 E. 1700 South, Provo, UT 84606. 1-800-453-1267.

- **OCR Systems, Inc.** has announced **ReadRight Personal** as the update to ReadRight 2.01 for hand-held scanners. New features include an omnifont recognition system and page decomposition that automatically separates text from graphics. Contact: OCR Systems, Inc., 1800 Byberry Rd., Suite 1405, Huntington Valley, PA 19006. (215)938-7460.

Continued on page 159

network operating system for Apple II, Macintosh, or IBM to share a single PC server's hard drive. The software is also compatible with other popular PC network operating systems and can be used in conjunction with Novell's NetWare. Omnishare is targeted toward the educational market, where Corvus has a large installed base of Constellation for Apple II users. It can accommodate network storage of up to 256Mb. Corvus Systems, Inc., 160 Great Oaks Blvd., San Jose, CA 95119. (408)281-4100.

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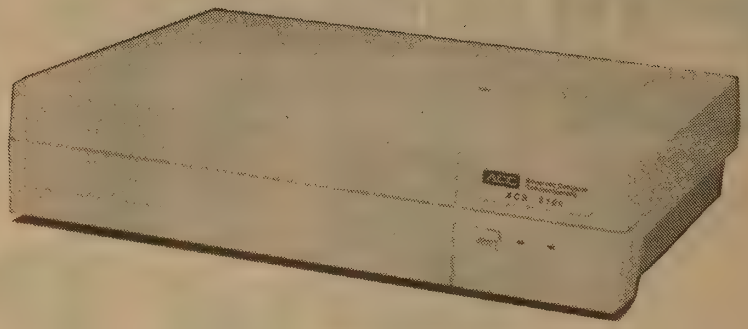

ACC BUILDS LOCAL BRIDGES

Making its entry into the local bridge market, Advanced Computer Communications (ACC) has introduced its ACS 2100 Local Bridge. This unit is designed as the first in a series of flexible local networking devices that transparently connect heterogeneous LANs or partitions large networks. With a sustained throughput rate of 12,500 packets/second, the ACS 2100 operates at twice the speed of similarly priced units. A plug-and-play device, it automatically configures itself and builds address tables as it learns the location of devices on the network. If devices are moved or added, the ACS 2100 adjusts its forwarding table to reflect the current revised topology. Advanced Computer Communications, Inc., 720 Santa Barbara St., Santa Barbara, CA 93101. (805)963-9431.

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pcANYWHERE IV/LAN is a remote communications software package for network-based PC users providing complete, high-speed remote computing and general communications via a standard modem. This software allows you to control another PC from a remote site, provides bi-directional file transfer in the foreground or background, and simultaneous printing at both host and remote locations. pcANYWHERE IV/LAN supports NetWare IPX and NetBIOS network transports, and all IBM communication ports. The system requirements are any IBM PC, XT, AT, PS/2 or compatible running MS DOS 3.1 or higher with at least 320K RAM. DMA, Inc., 1776 E. Jericho Turnpike, Huntington, NY 11743. (516)462-0440.

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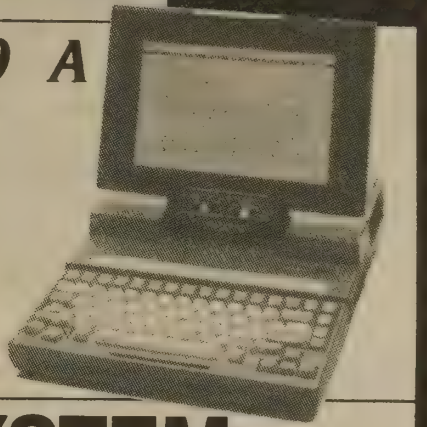

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- 2 Standard Slots (1-8, 1-16)
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- 1.44 MB, 3½″ Floppy Drive
- 20 or 40 MB Hard Drive
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- External Display Connector
- Battery Back-Up
- 14.8 lbs.

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20 MB

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40 MB

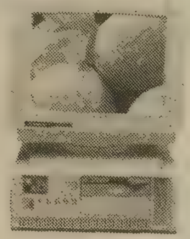
8088-10 COMPLETE

- 10 MHz
- 640K RAM
- 360K Floppy Drive
- Case/Power Supply
- Controller Card
- Keyboard
- Mono Monitor

$399

286-12 SYSTEM

***** SPECIAL *****



- 12 MHz, 0 Wait
- 512K RAM
- 1.2 Floppy Drive
- Case & Power Supply
- IDE Controller
- 101 Keyboard

$295
★ Monitor Extra

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- 80386 16 MHz
- 512K Exp To 4 MB
- 1.2 MB Floppy Drive
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- HDD/FDD Controller
- Parallel/Serial Ports
- 101 Keyboard

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★ Monitor Extra

386-20 SYSTEM

- 80386 20 MHz
- 1 MB Exp To 8 MB
- 2.3 MB Floppy
- Case & Power Supply
- HDD/FDD Controller
- Parallel/Serial Ports
- 101 Keyboard

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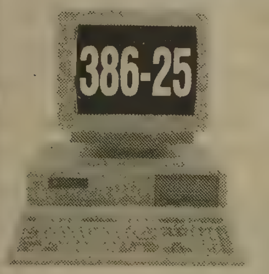
★ Monitor Extra

386-25 SYSTEM



- 80386 25 MHz
- 1 MB Exp To 8 MB
- 1.2 MB Floppy Drive
- Case & Power Supply
- HDD/FDD Controller
- Parallel/Serial Ports
- 101 Keyboard

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★ Monitor Extra

386-25 SYSTEM

- 80386 25 MHz
- 1 MB Exp To 8 MB
- 64K Cache
- 1.2 MB Floppy Drive
- Case & Power Supply
- HDD/FDD Controller
- Parallel/Serial Ports
- 101 Keyboard

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386-25 W/CACHE

386-33 SYSTEM

- 80386 33 MHz
- Cache Built-In
- 1 MB Exp To 8 MB
- 1.2 Floppy Drive
- Case & Power Supply
- Parallel/Serial Port
- HDD/FDD Controller
- 101 Keyboard

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- Landmark=115
- 1 MB Exp To 8 MB
- 1.2 Floppy Drive
- Case/Power Supply
- HDD/FDD Controller
- Parallel/Serial Ports
- 101 Keyboard

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Conner Peripheral IDE 100 MB Controller Built-In	649
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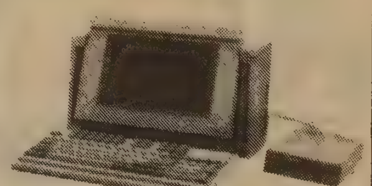

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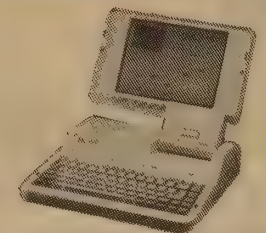

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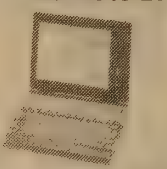

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Apple's new Personal LaserWriter printers give Macintosh users a laser printer at a considerably lower price. The Personal LaserWriter SC is a single-user printer that handles basic text and graphics using QuickDraw. The Personal LaserWriter NT is a multiuser printer for individuals and small groups who need more advanced graphics capabilities. In contrast to the SC, the NT offers PostScript as well as Apple Talk/Local Talk. Both printers are more compact in size than Apple's LaserWriter II line. The Personal line, however, only supports 4ppm as opposed to the 8ppm of the LaserWriter II. (Personal LaserWriter SC lists for $1,999; the Personal LaserWriter NT for $3,299) Apple Computer, Inc., 20525 Mariani Ave., Cupertino, CA 95014. (408)996-1010.

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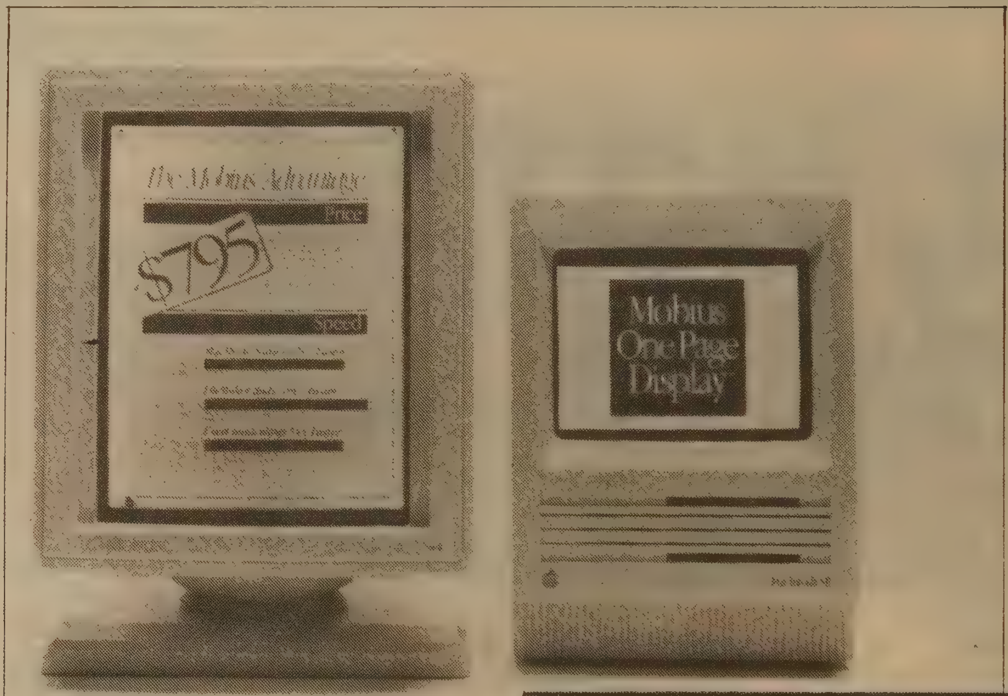
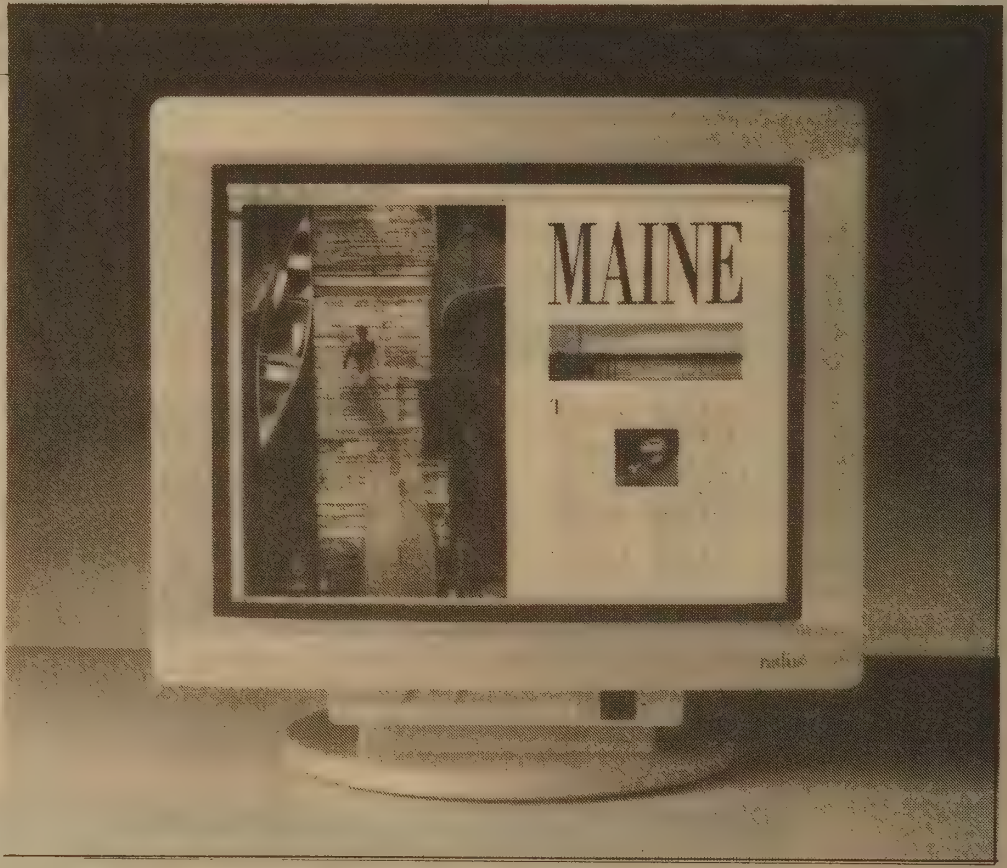


and cables. ($695) Mobius Technologies, Inc., 5835 Doyle St., Emeryville, CA 94608. (415)654-0556 or 1-800-669-0556.

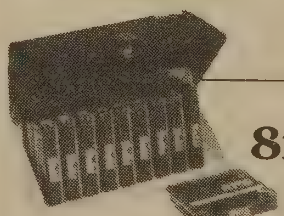
RADIUS INTRODUCES TWO-PAGE MONOCHROME DISPLAY

The TPD/21 is the new two-page 21" monochrome/grayscale display system from Radius. It is both Macintosh and IBM PC/AT compatible. On the Macintosh it offers resolution of 1152 x 882 pixels at 74 dpi while on a PC/AT system it supports resolutions of 1280 x 960. Having an 8-bit grayscale capability, flat screen technology, high refresh rates and a polished glass screen makes this system ideal for desktop publishing and graphics. (RTPD $1,795; Macintosh interface $595; PC/AT interface $795) Radius, Inc., 1710 Fortune Dr., San Jose, CA 95131. (408)434-1010.



ON THE ROAD AGAIN WITH MY SE

Users of a Macintosh SE or SE/30 can now convert their system into a modular format using MACadam's ROAD E kit. The basic kit includes a 15" full-page monitor, a low-emission metal case with an SE-size footprint and a videocard. The optional NTSC driver permits connection to a television through the TV's RCA port. ROAD E can also work as a standalone portable hard disk when plugged into the SCSI port of any Mac. Clear instructions make the conversion quick and easy, taking only thirty to forty



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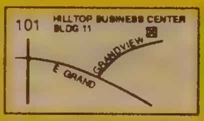

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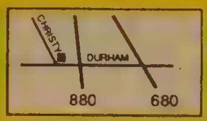

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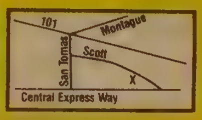

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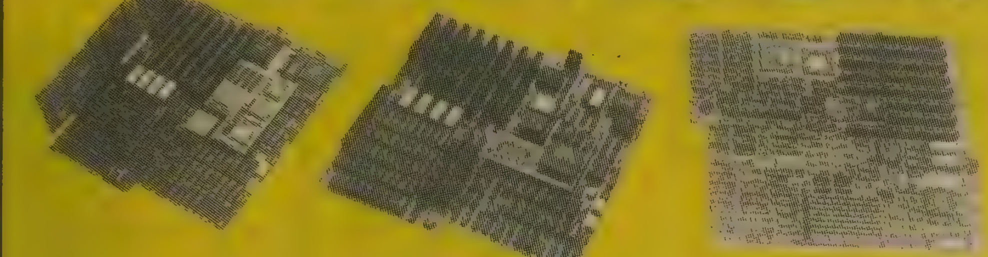

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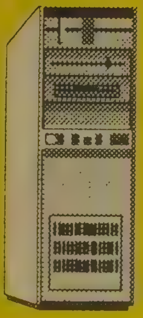
PC MAGAZINE

AMI 386 SX 16



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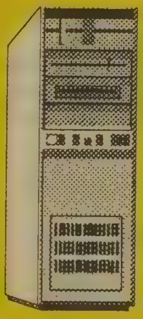

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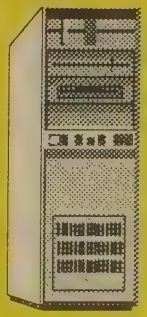

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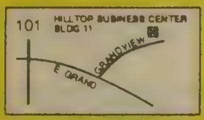

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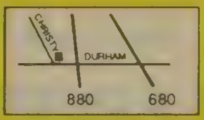

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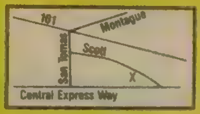

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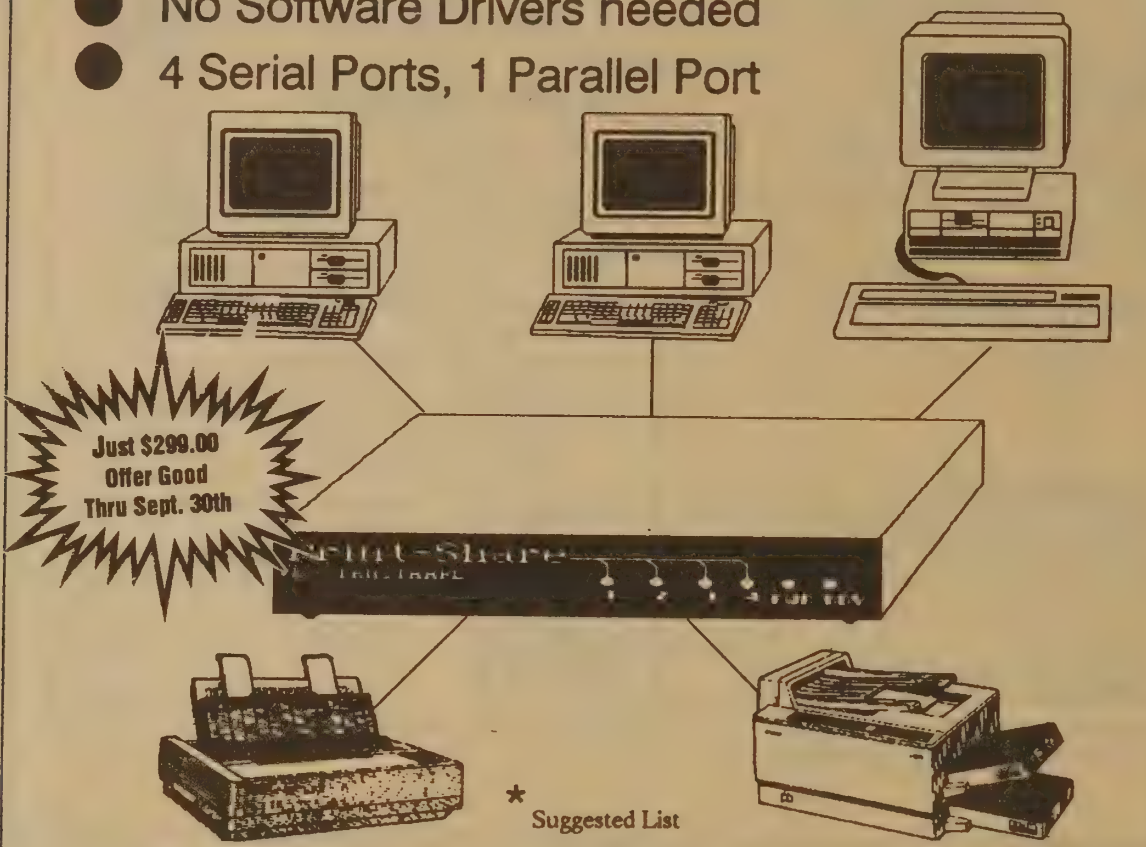

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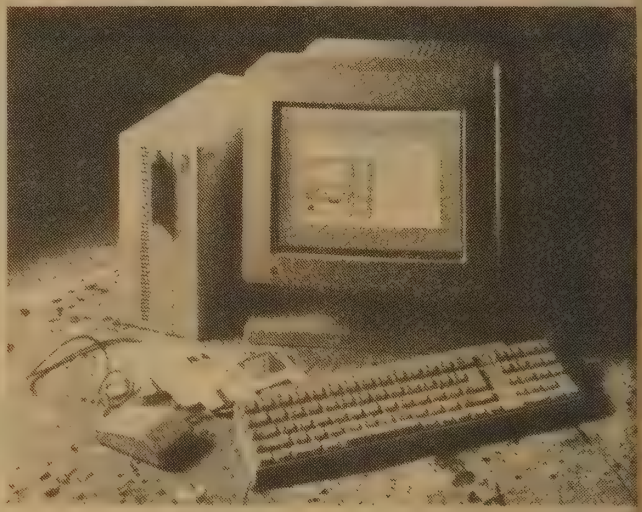

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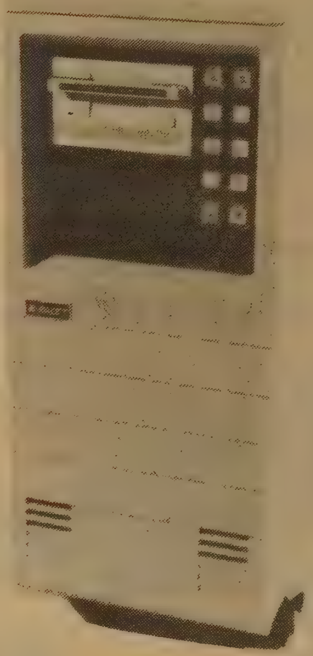

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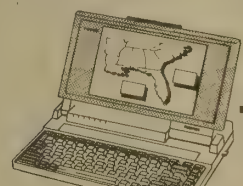

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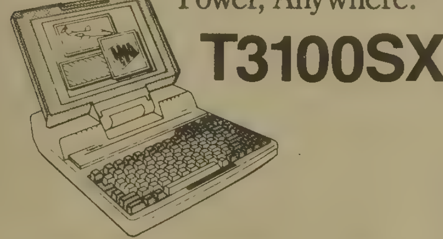

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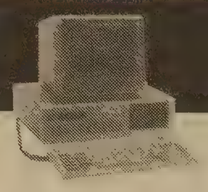

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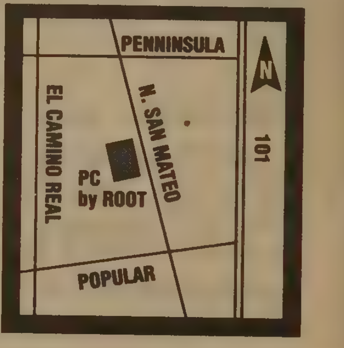

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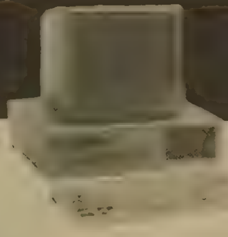

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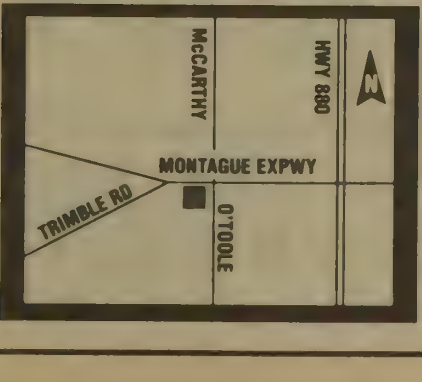

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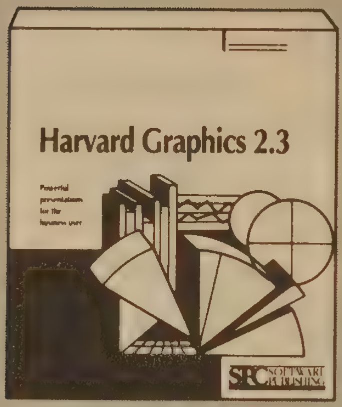

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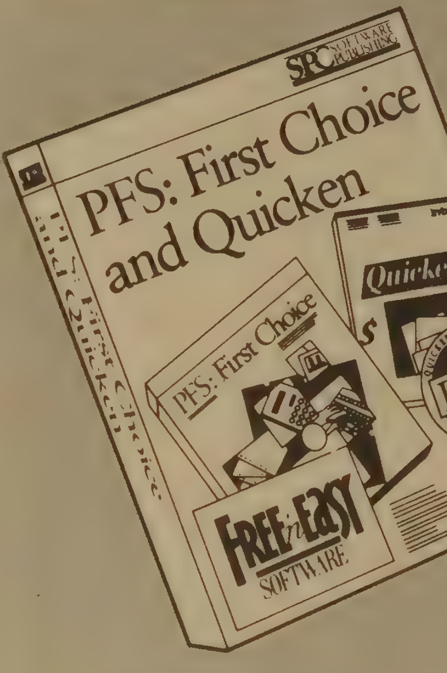

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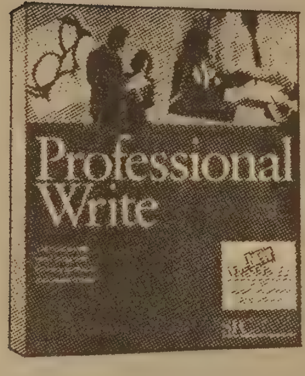

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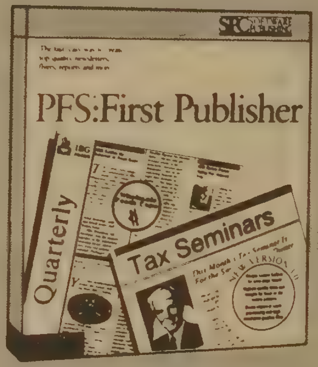

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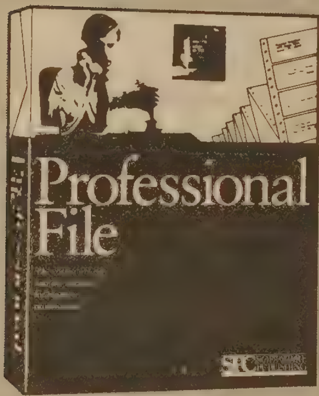

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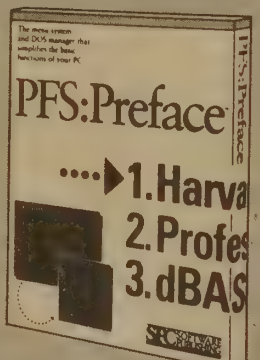

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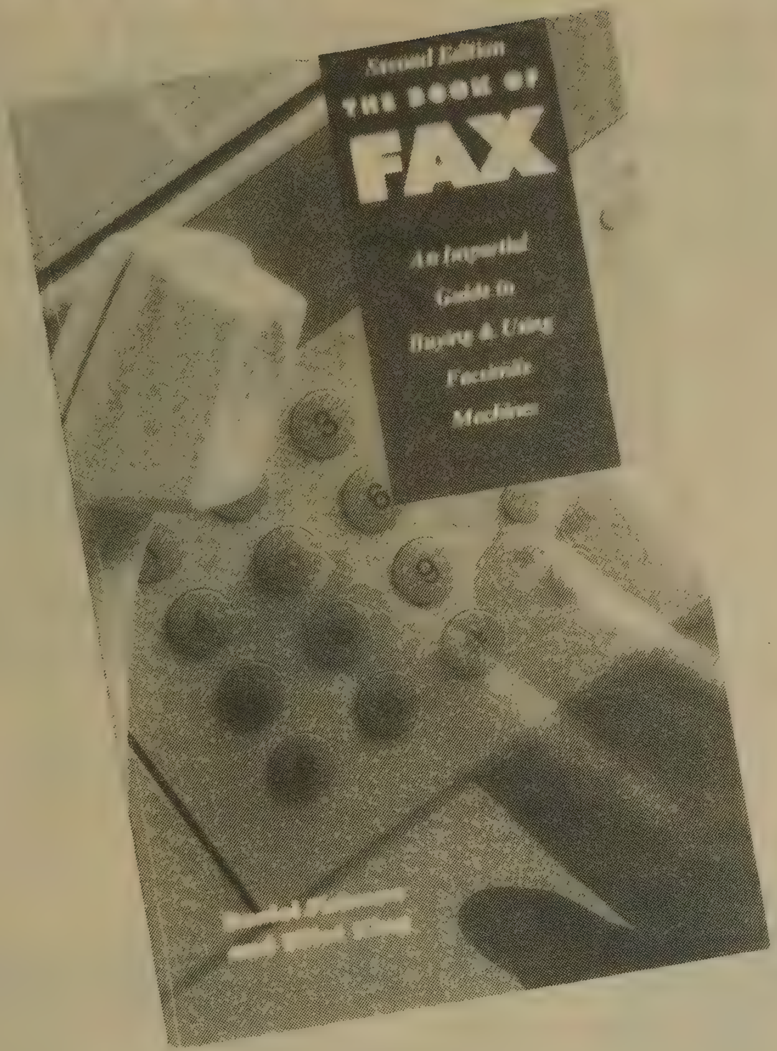
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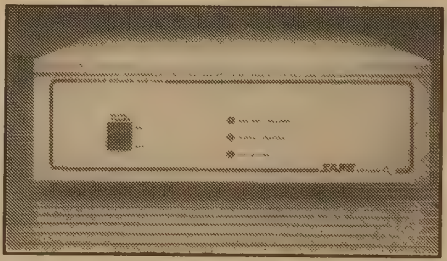

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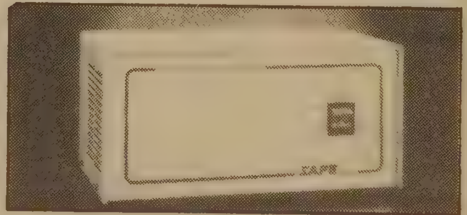

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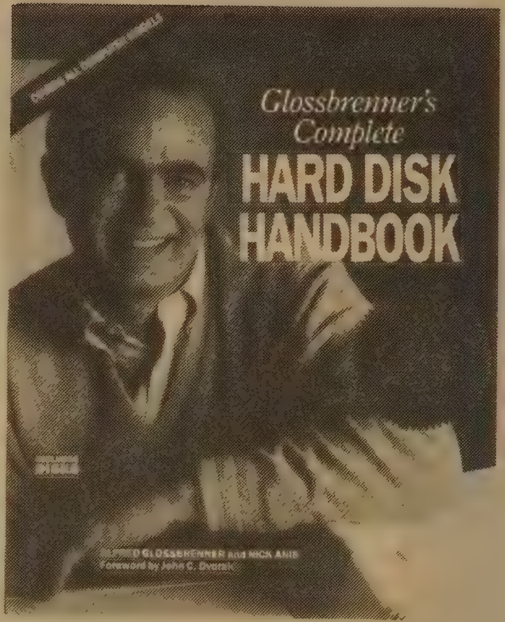
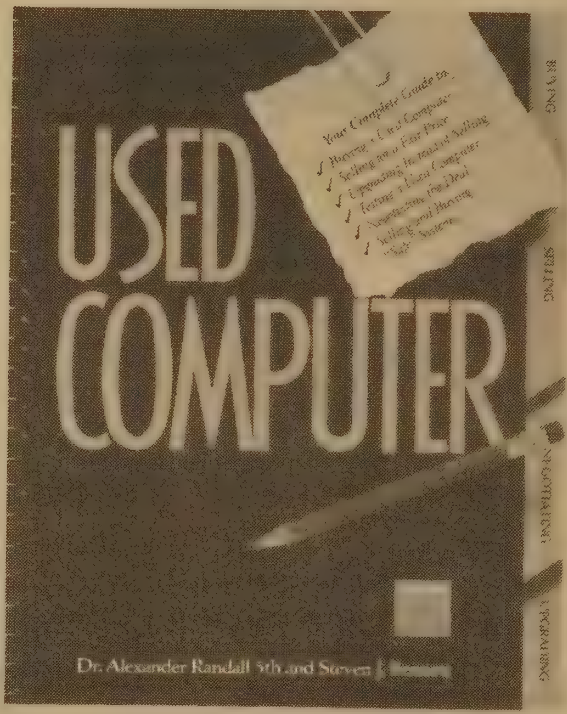
GLOSSBRENNER'S COMPLETE HARD DISK HANDBOOK

This substantial book in the Dvorak/Osborne McGraw-Hill series should be the definitive reference guide for DOS-run computer owners who have or are buying a hard disk. The book not only covers hard disk basics, but also describes how and where to buy a hard disk, installation, formatting, DOS files for setting up and loading, DOS disk limitations, navigating your system with DOS, backup, DOS shells, menus and front ends, file recovery, disk troubleshooting and much, much more. Included in the list price is a disk containing shareware and free disk management software. ($39.95) Osborne McGraw-Hill.





ALEX RANDALL'S USED COMPUTER HANDBOOK

In their *Used Computer Handbook,* Alex Randall and Steven Bennett have written a much needed analysis of the used computer market, for both buyers and sellers. They include an interesting curve showing five years of depreciation of a computer from the time you open the box. Also discussed are factors that can reverse this trend, such as a high demand for computers, proper installation and updates. There are sections on upgrading your PC vs. selling it, finding sellers and buyers through networks, and donating vs. selling your used computer. ($14.95) Microsoft Press.

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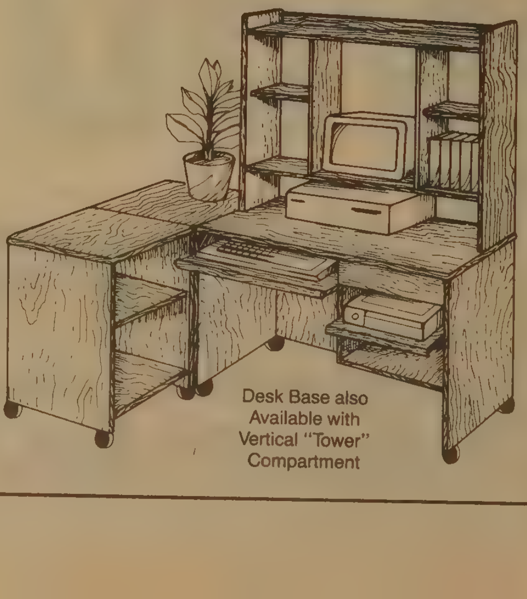

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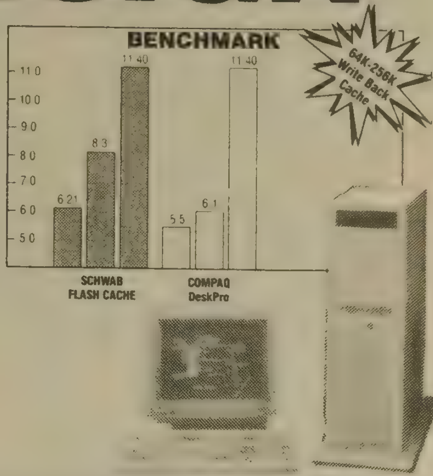

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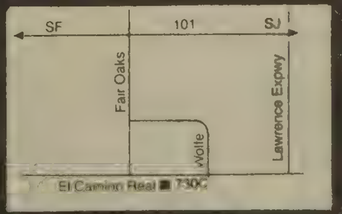

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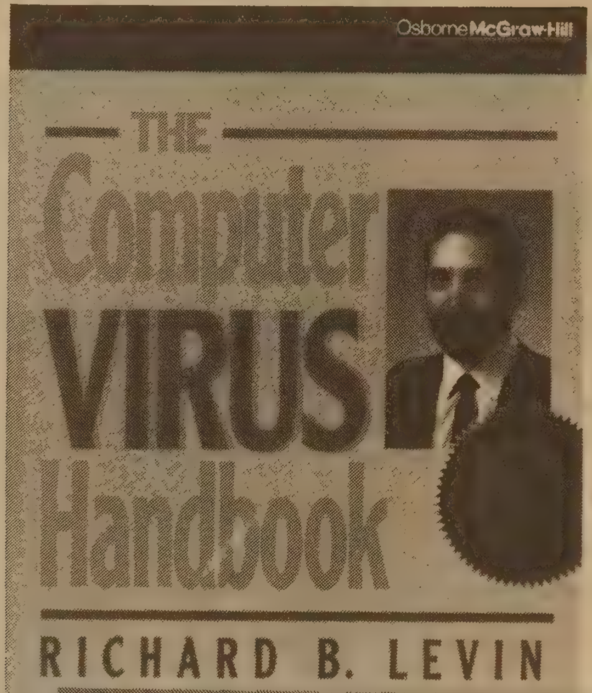

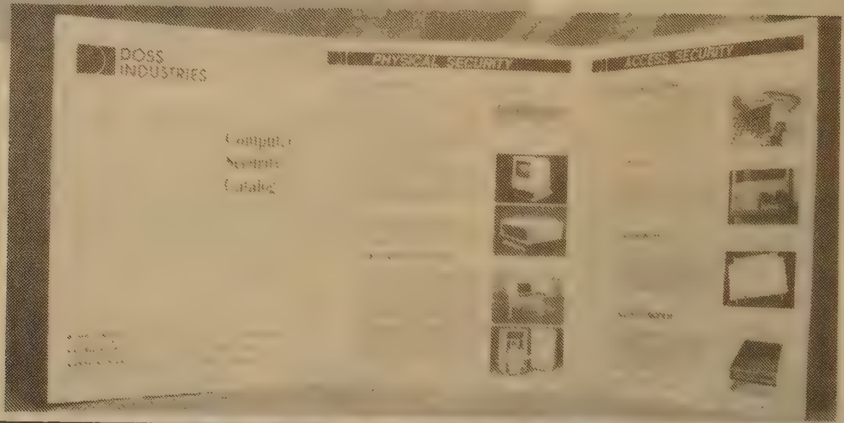

THE COMPUTER VIRUS HANDBOOK SHEDS NEW LIGHT

Richard B. Levin's new book presents a very thorough analysis of types of rogue software and how to detect and prevent the spread of most DOS-infecting viruses. His section on implementing an effective antivirus policy is especially thorough, as is his short chapter on general hard disk management. He gives a general review, with pros and cons, of several popular virus cleanup, scanning and eradication programs, ending with a chapter on his own virus detection system, Checkup. Unfortunately, information on Macintosh viruses is limited to Appendix D. Included in the price of the book are several money-saving coupons for popular Antivirus Utilities. ($24.95) Osborne McGraw-Hill.

DOSS INDUSTRIES PUBLISHES NEW SECURITY CATALOG

Doss Industries has published a new Computer Security Catalog with over thirty-five security products for IBM and Macintosh computers. Information is included on products for physical security, software security and access security. For a catalog and more information, contact: Doss Industries, Inc., 1-800-766-LOCK or (415)861-2223.

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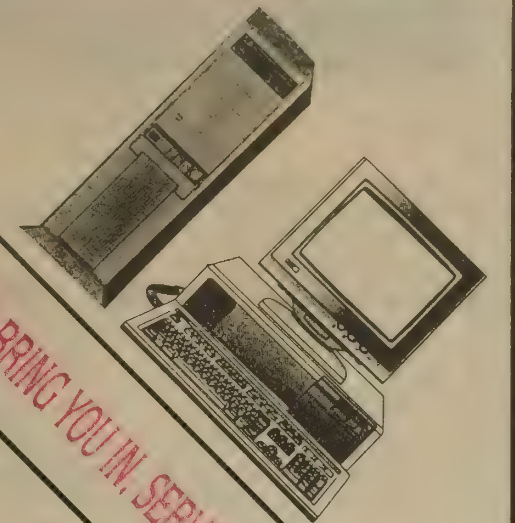

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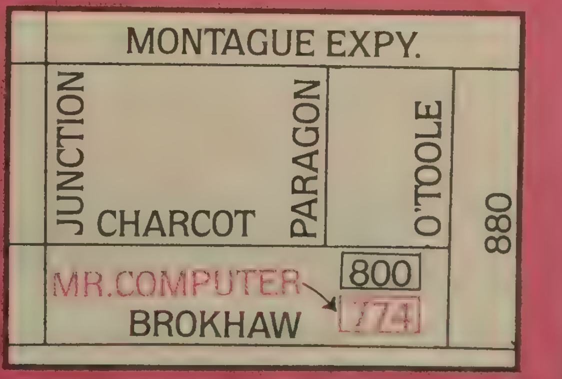

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continued from page 137

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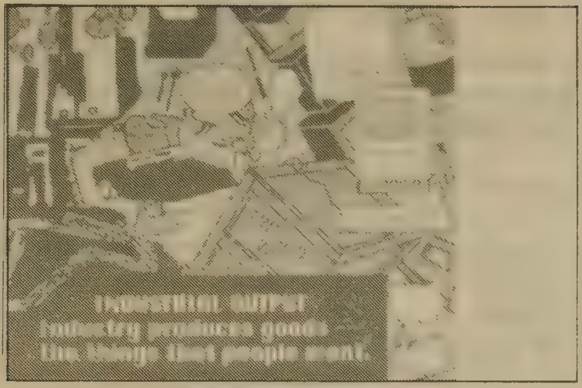
- **Shiva Corporation** is offering a trade-in program for those buying the **Fast Path v4** update. The FastPath gateway connects LocalTalk and Ethernet and supports multiple network protocols. For a limited time, owners can trade in FastPath v1, 2, or 3 or the Catman GatorBox and receive a FastPath v4 for only $999. Contact: Shiva Corp., 155 Second St., Cambridge, MA 02141. (617)864-8500.
- **SitBack Technologies, Inc.** is now shipping a major upgrade to **SitBack, v3.0**. SitBack is a memory resident backup utility that automatically performs total and incremental backup in the background on standalone PCs or whole networks. Contact: SitBack Technologies, Inc., 9290 Bond, Suite 210, Overland Park, KS 66214. (913)894-0808.
- **Tiara Computer Systems, Inc.** is offering an enhanced version of its **ARCnet PC** and **AT network adapter cards**. Other related adapter products, the ARCnet active hubs and 16-bit Ethernet coax adapter, have been reduced in price for ARCnet users. Contact: Tiara Computer Systems, Inc., 2700 Garcia Ave., Mountain View, CA 94043. (415)965-1700.
- **Ventura Software, Inc.**, a Xerox company, has announced an upgrade strategy for registered users of the **Ventura Publisher Gold Series**, DOS/GEM Edition. Under this new policy, customers who recently upgraded to the 3.0 GEM Edition will be able to purchase the Windows or OS/2 Editions for $195 until December 31, 1990. Registered users of Ventura Publisher 2.0 base product, 1.0 or 1.1 can upgrade to the GEM Edition for $160 or the Windows or OS/2 Editions for $195. Contact: Ventura Software, Inc., 15175 Innovation Dr., San Diego, CA 92128. (619)673-0172.

GAME REVIEWS

By Mike Markowitz



Balance of the Planet simulates the global ecosystem.

BALANCE OF THE PLANET

Designed By: Chris Crawford

Distributed By: Accolade

For: IBM PC (512K; CGA, EGA or VGA graphics) or Macintosh (1Mb); hard disk required for both versions

List Price: $49.95

Any new game by Chris Crawford (author of Balance of Power and other greats) is a major event in the world of desktop simulation.

Balance of the Planet is a simulation model of the global ecosystem and the world economy over the next fifty years. You take the imaginary role of UN High Commissioner for the Environment, an eco-czar with the power to tax various industries ("watch my lips, no Nuke taxes"). With your tax revenue you can subsidize various activities, like family planning or recycling centers, and invest in different research priorities (cleaner coal, solar energy, genetic engineering). The simulation includes 150 critical variables, and unlike many game designers, Crawford lets you see the equations that drive the model, and even tinker with them if you dare. Each "turn" represents a five-year plan, and most actions have immediate effects—a design compromise that trades realism for simplicity.

The game's graphics are strikingly different from the high-tech control panels and multicolor maps you might have expected. Amanda Goodenough (familiar to Mac users as the author of the Inigo stories and other HyperCard entertainments) created 150 screens that illustrate concepts in an informal, cartoon-like way. Crawford says he "wanted warm and cuddly artwork."

The game manual is a substantial 136-page softcover book. Along with clear explanations of how to play, there are thoughtful Designer's Notes, a "Quickie Math Refresher," a glossary, a bibliography and a discussion of "How accurate is the simulation?" Most of the manual consists of one-page essays on each of the major concepts or variables in the game.

Balance of the Planet is highly abstract and quantitative—the sort of game an accountant might love. For the first few turns, your score drops relentlessly, whatever you do, as starvation, pollution and the devastation of natural habitats work their evil way. As you learn to make the right choices, your score improves.

Since many of the environmental issues in the game are controversial, Crawford lets you create "bias" files that reflect your own values, opinions and judgments about the world. There are four ready-made bias files that you can load at the start of a game: Pro-Nuclear, Environmentalist, Industrialist and Third World.

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-HL6905TK,19", VGA to 1280X1024N	1999
HITACHI	
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-HM4319D, 19", VGA to 1280X1024N	1995
-HM4119DDL, 19", 1024X768N	2199
-HM4119DAA, 19", 1280X1024N	2299
NEC	
-NEC 4D, 16" VGA to 1024X768N	1199
-NEC 5D, 19" VGA to 1280X1024N	2149
NANAO	
-9070S, 16", 20-50KHz 1024X768N	979
-9400, 20", VGA to 1280X1024	2615

Graphic Card

CONTROL Systems	
-XJ10, 1024X768N or 1024X1024I	1695
-XJ12, 1280X1024N or 1024X1024N	1999
METHEUS	
-UGA1104, 1024X768, 48.8KHz	895
-UGA1224, 1280X1024, 64KHz	1295
NEC Graphics Engine	
-MGE AT/16, 1024X768N, 16 Color	695
-MGE AT/256, 1024X678N, 256 Color	995
Sota Technology	
-340i, 1024X768N, 16 Color	695
RENAISSANCE GRX	
-Rendition II/16, 1024X768N	995
-Rendition II/256, 1024X768N	1395
HERCULES GRAPHIC STATION	
-1024X768, 256 Color	795
HP GRAPHICS CARD	
-IGC10, 1024X768, TI 34020	850
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NEC SPECIAL !!!
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-Option for Multipen	469
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-3700, A-E, Cut & Roll	2999
-4000, A-E, 20 ips	3499
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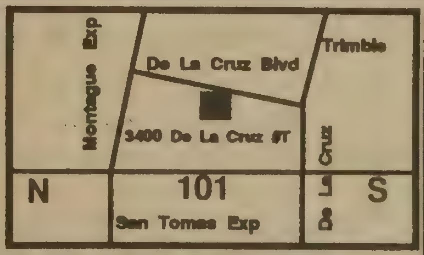

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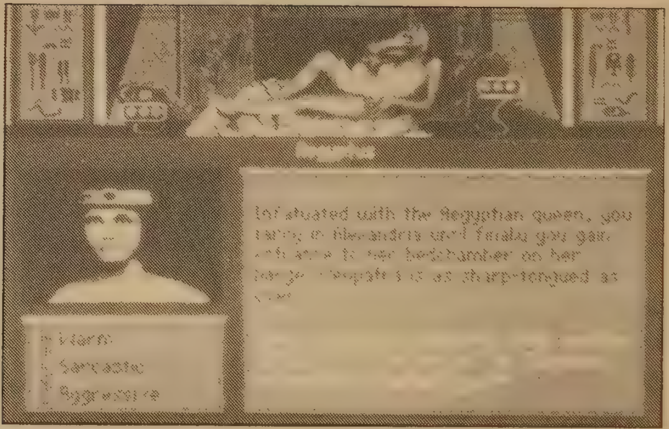


As a successful player, you may win the hand of Cleopatra.

pies, has an elegant automated installer program. The Mac version is on two 800K disks. Both versions require a hard disk, take up about 1.5Mb of space, and share a common look and feel. Although Crawford shudders at the thought of his work being "consigned to some sort of kiddie-software-ghetto," I would highly recommend Balance of the Planet for the consideration of any computer-using educator who teaches economics, earth science, future studies, or environmental issues.

CENTURION: DEFENDER OF ROME

Designed By: Kellyn Beeck, Evan and Nicky Robinson

Published By: Electronic Arts

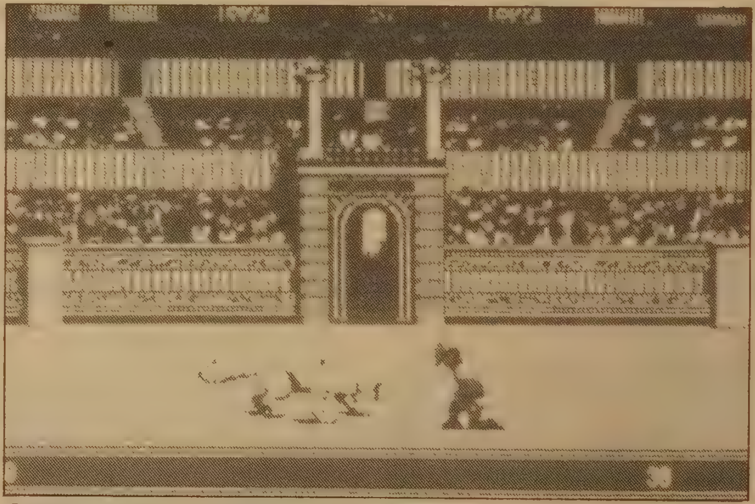
For: IBM PC and compatibles (640K) EGA, Tandy 16-color, VGA or MCGA graphics required, Soundblaster and Roland MT-32 audio cards supported, hard disk and mouse recommended

List Price: $49.95

If you've ever identified with Kirk Douglas in *Spartacus*, Charlton Heston in *Ben Hur*, or John Cleese in *Life of Brian*, this is the game for you. Centurion combines enough Imperial splendor and glory to please a Hollywood mogul, with enough historical accuracy to please Miss Seligson, my unforgettable high school Latin teacher.

You start out in the time of the early Republic (c. 275 BC) as a young officer with one legion. As you move across the map into neighboring provinces, you can form alliances, or fight the barbarians. You have control over realistic battlefield tactics and formations. As you gain rank, you can build fleets and fight sea battles, stage chariot races in the Circus Maximus, or preside over gladiatorial combats in the Colosseum, with full animation and sound effects.

There are nine grades of rank, with increasing income and power, leading to the supreme title of Caesar. You gain rank by adding provinces to the Empire, winning chariot races, staging gladiator shows, and avoiding revolts. You can even emulate Richard Burton by winning the hand of the lovely Cleopatra. There are many ways to win, and plenty of options to keep the game interesting through multiple playings. The graphics deserve a VGA monitor or equivalent.



Centurion offers recreation as well as combat.

The 42-page manual is essential reading, and you'll need to keep the 12-page Command Summary close at hand to manage this complex game. A big, handsome fold-out map provides obscure geographic facts for the unobtrusive off-disk copy protection scheme.

PANZER BATTLES

Designed By: Roger Keating, Danny Stevens, Ian Trout

Published By: Strategic Studies Group

For: Macintosh (1Mb), supports color, Multifinder compatible; IBM PC and Apple II versions also available

List Price: $39.95

The Eastern Front in World War II was the greatest single conflict in history, whether measured by geographic extent, casualties, number of guns and tanks engaged, or total wargames published. For a gritty, realistic account of the German side, rent the movie *Cross of Iron*. For a sentimental account of the Russian side, rent the movie *Ballad of a Soldier*. To understand both sides, buy the game Panzer Battles for your Macintosh.

As General Montgomery once said, the two great lessons of World War II were: (1) Never invade Russia, and (2) Never invade China. Although German strategy was fatally flawed by Hitler's insanity, German tactics were consistently cool, thoughtful and professional. Although the Russian high command was decimated by Stalin's paranoia, the Soviet soldier was doggedly brave and resourceful. The game, based on meticulous research, clearly shows these characteristics of the two armies using six exemplary battles from different stages of the war:

Minsk (June 1941), Moscow (December 1941), Kharkov (May 1942), Prokhorovka (July 1943), Kanev (September 1943), and Korsun (February 1944).

The battles are modeled at the regimental/battalion level, and a complete set of utilities are provided to customize the scenarios, or create new ones. Like the other titles in this series, Panzer Battles is a complex simulation, recommended for experienced players, or those with a deep interest in the subject.

There are separate monochrome and color versions for each battle. Users will appreciate

Continued on page 170

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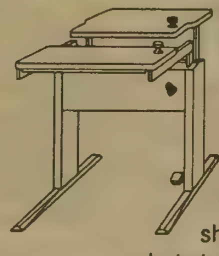
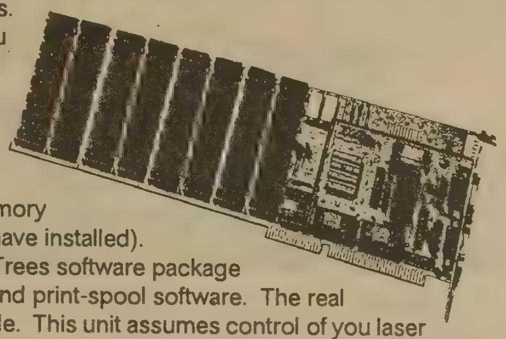


These tidy tables were made just to make your life easier. They feature separate areas for your monitor and keyboard that are individually adjustable for height with the turn of a crank or a press on a pedal. That means that different users can quickly adjust the table surfaces to the configuration that suits them, with no tools! They are small enough to fit just about anywhere (28" wide), very rugged (and heavy!) and are a tan color with wood-grain laminate tops.The monitor platform adjusts from 23" to 33" high, and the keyboard portion adjusts from 24" to 33". In addition, the keyboard surface is on runners and can be adjusted back and forth 7" (thus the front-to-back depth varies from 30" to 37"). We have two models of these tables, one that features a tilt adjustment for both surfaces (but the knob for that might be in the way of a mouse), and one with flat, non-adjustable surfaces. Sorry, they are too big and heavy to ship UPS, so your best bet is to stop by and pick one out. Don't delay, though! These tables are used, but at **$49.95**, they are going fast!

Take Control of your Laser Printer & increase your AT's RAM!



If you own an AT-class machine and an older Laser Printer with non-upgradeable memory and no down-loadable font capability, you know how limiting and slow that is! You can't print out more than a half page of graphics, it seems to take forever, and you are limited to expensive cartridges for your font selections. And if your AT only has 512K or even 640K of RAM, you probably wish you could take full advantage of software packages that use the LIM EMS standard for Expanded Memory. Now you can solve both problems and only use up one system slot! We have a quantity of Tall Tree Systems' JRAM AT-3 EMS RAM Expansion boards with the JLaser Plus piggy-back controller installed. The JRAM AT-3 Board will hold up to 2 Megabytes of 256K DRAM chips (not included), and can be configured to add the memory anywhere in your system (even "on top" of other banks of RAM you may have installed). You can install up to four JRAM boards in a system. You also get the Tall Trees software package which includes the device drivers for the RAM board as well as RAMdisk and print-spool software. The real plus to this deal, however, is the JLaser Plus Laser Printer Controller module. This unit assumes control of you laser printe engine and uses its JRAM memory to speed up and enhance your laser printing capabilities. It even works with Bitstream Fontware downloadable fonts for an expanded font library! You need a special interface cable (not supplied, but available from TallTree Systems) which hooks up inside your Canon LBP-CX or LBP-SX engined laser printer (including the Apple Laserwriter, HP LaserJet, LaserJet Plus and Series II, and various Canon, Cordata, Imagen, NCR, Oasys, and QMS printers). It even has an input for a Canon IX-12 Scanner! Now the best part...we have a limited supply of these boards (new in boxes with 0K RAM) available for only **$69.00**! Less than half of what you'd expect to pay for the RAM board alone!

******FLASH!! We may have just located a few cables for connecting a Canon-engined laser printer to the above JLaser Board...They aren't cheap, but they are still less than retail. Call for details! ******

Finally! Something for Macintosh Users!

Yes, we hear you Macintosh aficionados! "Why doesn't HSC ever have anything for our Macs?" Well, we just don't see the volumes of material being offered for sale for Macs that we do for the DOS platforms. It's not that we're not looking! We did find something recently that may interest you Mac Desktop Publishers, however. It is the TableTools software package from Mansfield Systems. Preparing an attractive table of data has always been a page layout artist's nightmare when using a computer, but no more! TableTools will import your data in several formats, allow you to cut, paste, copy or exchange cells, group cells horizontally or vertically, edit and justify text, compute values, and create and edit graphics within the tables using MacPaint, MacDraw, Adobe Illustrator, FullPaint or Cricket Graph. You can then export your tables directly to Pagemaker, Microsoft Word, MacWrite, FullWrite Professional or Ready, Set, Go (and more!). You can easily prepare financial tables, annual reports, even crossword puzzles! This software package originally retailed for $695.00, but a special purchase allows us to offer it to you for a limited time at only **$79.95** ! The catch? Support is no longer available, but a comprehensive manual is included.

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California Resellers!

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Buyers' Guide

Maximize your sales and profits with the December issue of **MicroTimes, On-Street 12/11**. This special issue of **MicroTimes** is a year-round resource featuring a comprehensive **Buyers' Guide and Reseller Directory** to make the most of your important selling season and bring you new customers in 1991. We invite you, as a reseller of computer products in the **Bay Area**, to participate by completing the attached **Reseller Directory Survey** and mailing or faxing it to our editorial department by **October 1, 1990**.

MicroTimes 1990

Computer And Software Buyers' Guide

Reseller Survey

Store Name: ______________________
Store Manager: ______________________
Address: ______________________
City: ______________ State: ________ Zip: ________
Phone: ______________ Other Locations: ______________

What applications does your business specialize in, and who are your in-house experts for each? (List up to three.)

Specialty	Expert

What operating systems does your business support?

MS-DOS ________
AmigaDOS ________
UNIX/XENIX ________
OS/2 ________
Macintosh ________
CP/M ________
TOS/Atari ________
Other (specify) ________
____

List the three top-selling brands sold at your store in 1990.

____

What special value-added services (e.g. service, training, support, warranties, return policy, etc.) does your business offer?

____

Take advantage of this FREE editorial listing. Complete this form and return it to MicroTimes before October 1, 1990. And plan now to make the most of your selling season with the **MicroTimes 1990 Computer And Software Buyers' Guide!**

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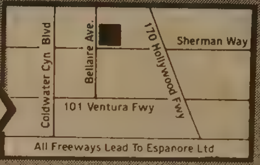

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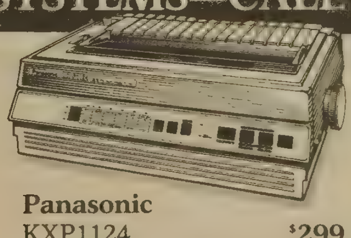

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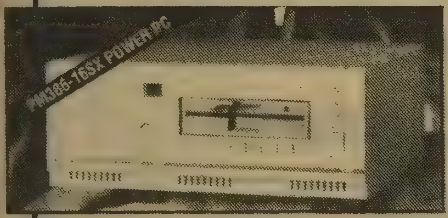

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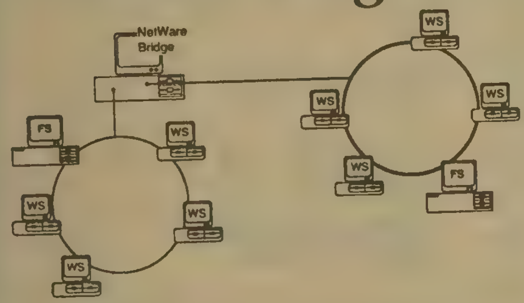

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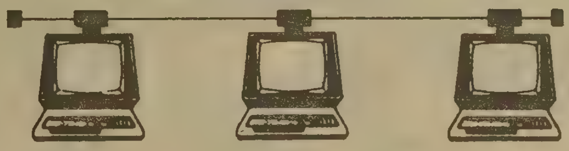

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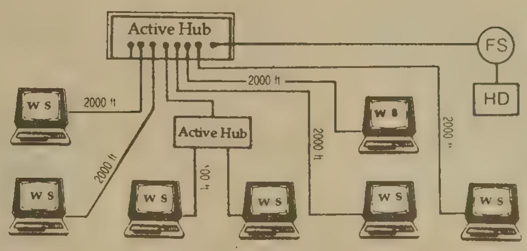

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Continued from page 162

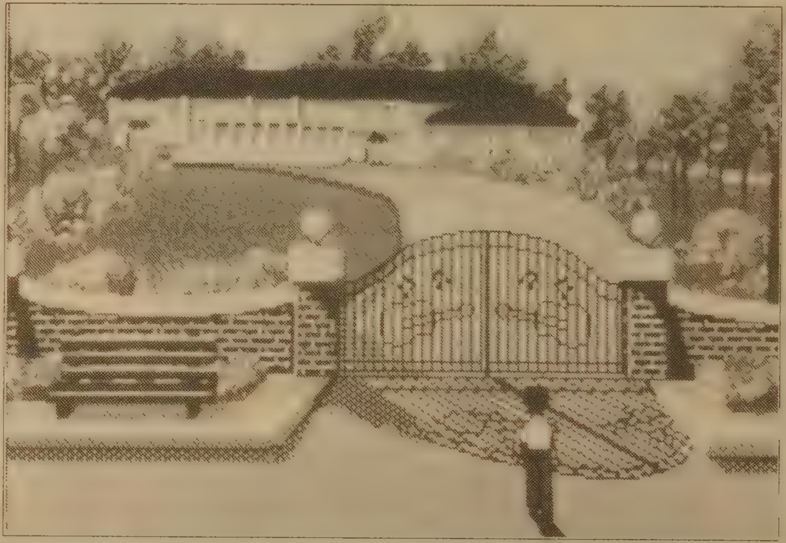
the new cardboard box (in place of SSG's previous album-style packaging), but will miss the big laminated full-color maps shipped in previous SSG titles—another casualty of rising production costs.

When you talk to people from Apple, they insist that the Macintosh is "not positioned as a game computer." Marketing types tend to be embarrassed by the whole idea of computer entertainment, thinking it impairs a businesslike corporate image. But when you see the richness and beauty of a game like Panzer Battles on a Mac II color system, you realize that the Mac can be a very great game machine, if designers and programmers are only willing to create the software.

SEARCH FOR THE KING

Designed By: Steve Cartwright
Published By: Accolade
For: IBM PC (640K) VGA, CGA, MCGA or EGA graphics, 8MHz CPU and hard disk recommended
List Price: $59.95

Like the Pillsbury Doughboy he ultimately came to resemble, the image of the late Elvis Presley is copyrighted corporate property, and you cannot use it without appropriate permission and payment to the owners. In Search for the King, a new animated graphic adventure, you take on the role of a modern-day Nerd seeking to discover a missing entertainer—some say he's dead, some say he vanished mysteriously. In the fine print on Page 3 of the manual, Accolade's attorneys say, "any similarities of characters in the game to persons living or dead is either coincidental, accidental or unintended." Wink, wink.



Search for the King, from Accolade, takes you on a search for a missing entertainer.

Despite the lightweight theme, there is some heavyweight programming in this package. The program is installed from five 5.25" floppies or three 3.5" disks. We have entered an era of games bigger than Microsoft Excel. You may have to remove your memory resident utilities—"our games are greedy and don't like to share memory with these products." The game engine understands a vocabulary of about 1500 words, including misspelled ones. Along with standard audio cards, the game supports sound output to the Casio CT-460 and other MIDI instruments.

The off-disk copy protection scheme uses a card that can only be read using special red cellophane glasses, included in the box.

This will also be the first game to have its own telephone number: (900)990-HINT. A clue book ($12.95) will also be offered. Sensitive users may feel that Search for the King follows in the sleazy footsteps of products like last year's loathsome, sneering, sexist epic, Leisure Suit Larry. It is certainly aimed at a different audience than the typical Dungeon/Dragon wimp. ■

Sensitive users may feel that Search for the King follows in the sleazy footsteps of products like last year's loathsome, sneering, sexist epic, Leisure Suit Larry. It is certainly aimed at a different audience than the typical Dungeon/Dragon wimp.

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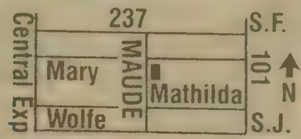

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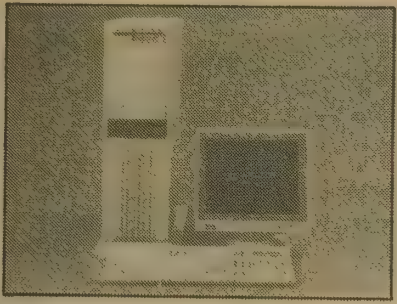

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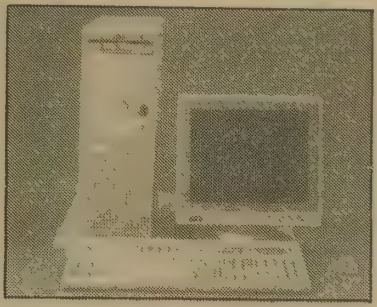

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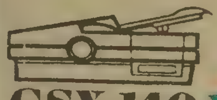

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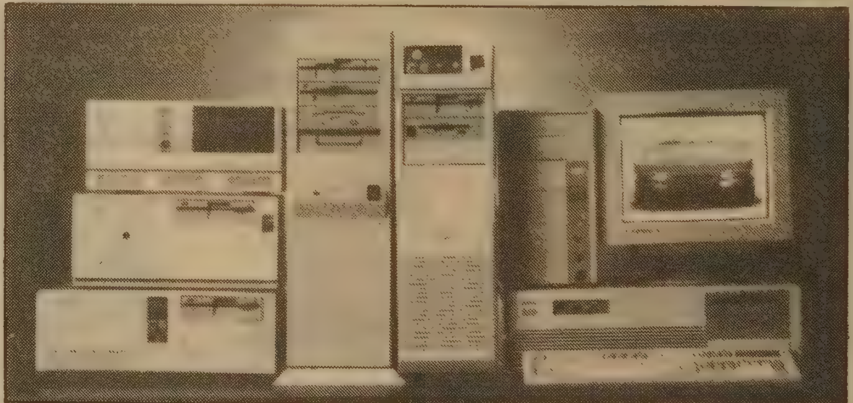

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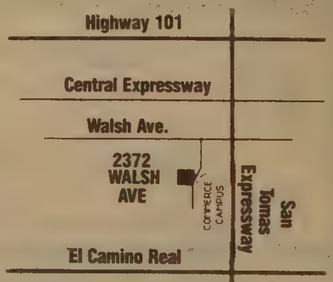

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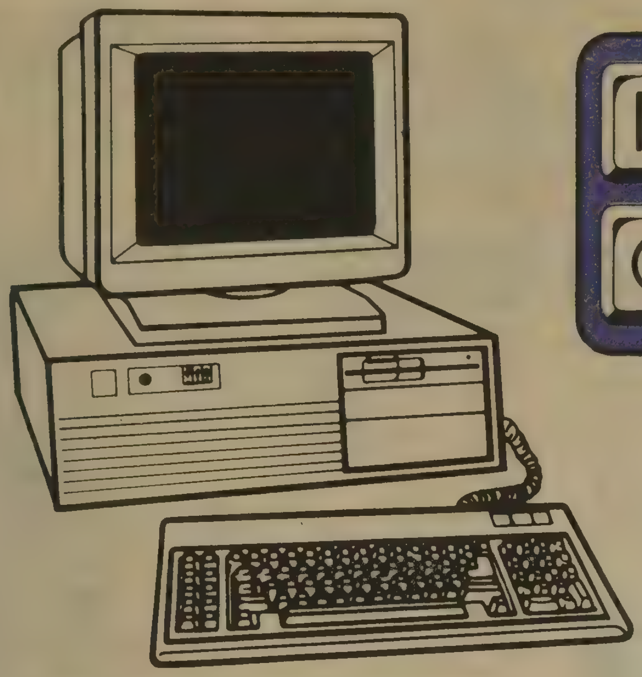

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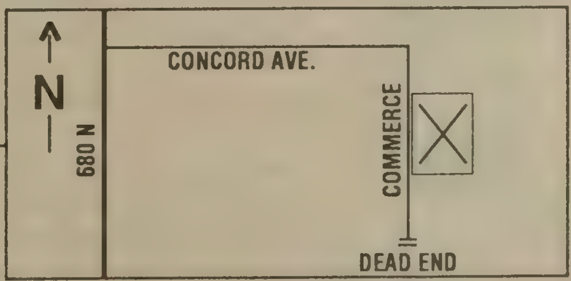

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BMUG Report
The Cupertino Shuffle

BY DAVID MORGENSTERN

I'm on a diet now, and every thought turns to food. I've served up a fresh slice of pizza BMUG style—hunks of Apple, hacks and viruses. This may seem an unusual mixture to some pepperoni-only eaters, but not to the Berkeley crowd. After meetings we head down to Nino's Brazilian pizzeria for hearts of palm, artichokes, and linguica. Dig in!

APPLE TURNOVERS

Apple headquarters still looks like an airline terminal, with international incoming and outgoing traffic. One high mucky-muck takes a hike, and it's time for another management reorganization. Some of the departures are people cashing in their stock options, or taking their special "golden parachutes," when they're diving out the window. The buildings of the Cupertino campus are not too many stories above ground level, so the corporate captains are off and running in nanoseconds.

BMUG

In July, Bill Atkinson, one of the great Macintosh programmers, left Apple to form a new company, General Magic, Inc. Bill wrote the original QuickDraw graphic routines used in the Lisa and Mac. He wrote MacPaint, so that users could take advantage of all the neat programming he had accomplished in QuickDraw. He's also the father of HyperCard, the fantastic programming tool that comes free with every Mac.

Bill was joined by another famous programming star, Andy Herzfeld, and Mark Porat, an ex-Apple engineer. The company will be working on some Advanced Technical Group (Apple's think tank for new projects) high-tech toy that Apple decided was not right for the product line. Apple covered its bets with a minority share in the venture; that's described as an "Apple spin-off."

The word is that the product will be "educational," perhaps named the Personal Communicator. You can bet that something cooked up by these guys will not be something that only kids will want to use, unless it's built into a skateboard.

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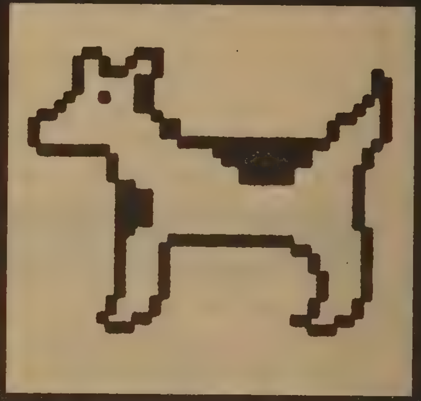
- The fallout from Jean Louis Gassée's departure is starting to be detected in Apple's engineering departments. The big cheese, John Sculley, took over as chief technical officer, and is trying hard to fill J-L's loafers. Insiders report that Sculley has difficulty handling long and involved technical presentations. A lightning presentation with glitz and fireworks will have the edge in getting the go-ahead from the boss. Has John been taking briefing lessons from the last US president, Mr. Teflon himself?

Jean-Louis may have had an ego with the properties of a gas—it expanded to fill all available space—but he had a real background in engineering. He knew what was what in the computer industry, and had little tolerance for projects that didn't fit into his virtual world-view.

Everyone is waiting to see what Gassée will do NeXT. We'll see if he can afford to be quite so sneeringly arrogant when he's no longer the top dog. Macintosh users can only hope that Sculley will get some beginner's luck in the new product department.

- HyperCard 2.0 was announced on June 26, but is not expected to ship until October, when the Classic Mac, the Plus/SE replacement, will be unveiled to the public. In late July, Apple kept insisting that 2.0 would ship at the end of the month, but it was pointed out at a BMUG meeting that the shipping destination was never specified. Perhaps it was sent to Bill Atkinson's old address—return to sender.



As all Mac wizards know, "moof" is the preferred statement for dogcows.

The program is so far overdue that Apple felt they had to do *something*, even announcing a release that the whole world knew was coming. Did Apple think that we didn't know they were working on the 2.0 version, or that we thought they might abandon work on HyperCard?

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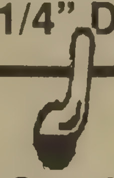

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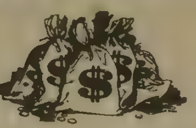

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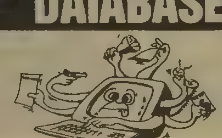

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with HyperCard 2.0, by HyperTalk guru Dan Winkler (who announced that he's leaving the Apple cart, too) and the Mac programmer's helper, Scott Knaster, had already hit the shelves at announcement time. Some of the goodies in the book were so fantastic, Dan felt they had to be incorporated into HyperCard. Another example of the programmer coding rule: No line before its time.

Some industry tea-leaf readers were concerned with the Hyper Wizard, Captain Bill, leaving the ship. Atkinson was removed from running the Hyper show quite a while ago, according to insiders. The programming team got tired of Bill shooting down ideas saying that a proposed feature was too difficult for his young daughter to understand, while his own equally obtuse pet features deserved mandatory inclusion.

LATEBYTE WITH BMUG

We've started a new tradition at the weekly BMUG meeting—top ten lists *a la* the David Letterman show. Scott Kronick, author, HyperCard advocate, and long-time BMUGer, presented *The Top Ten Advanced Technology Group Projects at Apple* to a recent meeting:

10. Allocate $200,000 to study why Check Boxes are marked with an "X" instead of a check.

9. Hide secret that George Bush and John Sculley are twins separated at birth.

8. Late at night, send chief idea scientist to rummage through garbage cans at the rear of Bill Atkinson's house.

7. Match Apple Support with artificial intelligence software to see if computers can emulate arrogance.

6. Design System 7.0 feature to automatically email resumes following quarterly company reorganization.

5. Hire more lawyers to protect work stolen from Xerox.

4. Allocate $500,000 for human interface research, then implement the guidelines found in Atkinson's trash.

3. Invent pseudonym for multimedia, so that the mystique is not hampered by its lack of use.

2. Test Mac viruses for compatibility with Windows 3.0.

1. Convince the Apple rank-and-file employees that management's golden parachutes actually enhance the "Power to Be Your Best."

MACHACKED TO BITS

MacHack '90, the fifth annual Macintosh Technical conference, was held this summer in Ann Arbor, Michigan. This love fest of Mac programmers, described as "96 hours on the edge," is four solid days and nights of coding and conferences, covering every angle of the development business.

There were seminars on System 7.0, programming languages, software copyrights, international issues, artificial intelligence, and even writing better manuals.

Mob psychology and night-long caffeinated programming sessions seem to bring out the brat in this crowd, but MacHack veterans claimed this group was pretty businesslike. A notorious meeting is usually the Apple Feedback Session, which some thought too tame—old-timers wanted to distribute baseball bats to the audience. There were still plenty of high and low level calls by the 250+ participants and presenters.

Here are some hacked bits:

• The Apple crew was asked about the Apple FAXmodem, which was an utter buggy fiasco. The reply was that the modem had been de-announced, and Apple's legal department wouldn't allow them to comment on products they've never released. One programmer quipped that Gassée was leaving to form a new spin-off company, and taking the FAXmodem and ImageWriter LQ with him. Jasmine would be providing the service for the products, and Microsoft the printer drivers. Kapow!

John Norstad, the creator of the anti-viral shareware Disinfectant, commented that his utility was certainly underpriced—it's free! He's still not asking for any money for all the countless hours he's put into the program.

Someone asked why recovery functions were not included in the Mac operating system. If a disk were bad, the Finder could instantly recover the disk, instead of requiring a third-party utility, like the Symantec programs (SUM). The logical response from this group of programming professionals was, "If we did everything, you guys wouldn't have jobs." What a concept!

• The future of the computer was also discussed. One silicon futurist felt that we will see machines with 200 MIPS on our desktops in the next few years, with no tremendous increase in price. The real innovations will be in computing (software), not in computers. The problem in the future will be to bridge the cultural gap between techies and non-techies. One group sees the limitless potential, while the other sits in front of the Nintendo refusing to be bothered. Could they be Lotus 1-2-3 eaters?

• Steven Bobker of *MacUser* magazine felt that Mac products are underpriced, especially utilities. This can only be a reference to the pricing situation of the PC world, where everyone expects to pay through the nose for everything, even the good, bad, and always ugly. There's been little argument about this gouging, since "business machines" always pass through the extra costs to the customer, right?

John Norstad, the creator of the anti-viral shareware Disinfectant, commented that his utility was certainly underpriced—it's free! He's still not asking for any money for all the countless hours he's put into the program. He remains the hero of the Mac Virus Wars, and released the Disinfectant 2.0 shortly after the conference. The new version (available on BMUG Utilities 8 disk) includes an INIT virus guard, like its high-priced commercial cousins.

I'd like to start an acknowledgment drive for John. If Disinfectant has ever saved your work, or any part of your anatomy, please send him a few bucks. His address is Academic Computing, Northwestern

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Information supplied by manufacturer data sheets, customer support departments, and the results of testing as completed and recently published by INFOWORLD, August 6, 1990; PCMagazine, August 1990; Adtech Micro Systems engineering department, June-August, 1990.

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• There's an annual contest at the conference for the best "hack." Some of the past winners include code now incorporated into commercial programs, like tear-off menus, and color icons. This year's winner was NetBunny by Dean Yu, which sends the EverReady pink rabbit beating a drum marching from Mac to Mac on an AppleTalk network. It was a big hit as it moved around the CPU-filled Machine Room that was open 24 hours a day for hacking.

A BMUGer observed that the night guard hired to protect the thousands of dollars of equipment in the Machine Room checked the backpacks of programmers ***entering*** the room, not exiting. Perhaps he was told to search for nasty computer bugs?

• Another MacHack ritual is going out to a movie. The locals didn't quite know what to make of 60 noisy programmers flooding into the opening night of *Dick Tracy*. One asked a female programmer if she was a little sorority sister of this fraternity!

Everyone knew where the hackers were sitting when they started yelling "Moof! moof!" at the screen—"moof" is the sound the LaserWriter Options dogcow makes.

Next year's event is already in the works. The first planning committee meeting took place in the hotel's California Suite Jacuzzi spa. The rough life of computer codepokes. Get along little dogcow!

UPCOMING EVENTS:

September 20	Advanced Software *Docucomp 1.5*, Esther Dyson *Edventure Holdings*.
September 26	SF BMUG West Meeting. PowerUp *Fact Form LetterWriter Plus*.
September 27	Petroglyph *Editorial Advisor*, Niles & Associates *EndNote*.
October 4	ACIUS *4D*, EarthQuest, Inc. *EarthQuest*.
October 11	Letraset *Color Studio*, Now Software *Now Utilities*.
October 18	TimeWorks *Publish it Easy*, BrightStar Technology *InterFace*.
October 24	SF BMUG West Meeting. To be announced.
October 25	Ceres Software *Inspiration*, Adobe *Illustrator 3.0*.

Call the BMUG Office for information about BMUG West, our San Francisco meeting.

COPY PROTECTION FROM HELL

There's a couple new Macintosh viruses making their way around the world, but don't lose any sleep over them—they only affect Atari computers. How can this be?

There have been a number of Macintosh emulators for the Atari and Amiga machines. The Spectre GCR is the most popular emulator for the Atari, by a company called Gadgets By Small. The Spectre consists of a small cartridge that attaches to a port in the back of the computer. Inside the device are 128K Macintosh ROMs, which users must buy separately. There are a couple of stores in the San Francisco Bay Area that sell used Mac Plus ROMs, but I've also seen ads for

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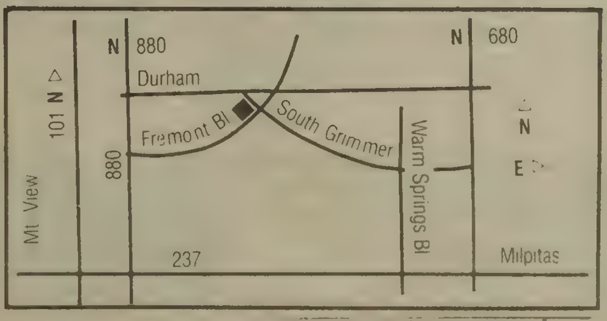

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illegal copied ROMs. Software allows the Spectre to read and write Mac disks, and use many programs. A new add-on board will give the GCR LocalTalk and a SCSI port for Macintosh hard disk drives.

Atari nuts hacking this device, and wanting help on Mac programming, sometimes show up at the BMUG developer's special interest group meetings. I regret to say that there's a bit of prejudice shown them, with the admonition to write good Atari programs instead of bumming a ride on the Mac.

One of the new viruses that attacks some Atari emulators is the Frankie virus. Frankie appears to be the first case of a virus being used for a "useful" purpose. It was created as a form of copy key protection for a now-defunct German emulator called the Aladin. This use of viruses has been the subject of science fiction stories for years, and now Macintosh users are the first to see it in action (perhaps I should say Atari users of Mac programs and ROMs).

The virus checks to see if it's running on a real Macintosh, and if so, turns itself off. If it's running on an Atari, it looks for a special hardware key in the emulator cartridge. When it doesn't find the key, it displays the message, "Frankie says: No more piracy!"—then causes the Atari to crash. By accident the Spectre is immune from this virus, but is susceptible to another, called the Kangaroo virus.

There was concern that these viruses might attack the current crop of Macintosh accelerator boards that put ROM code into RAM, but that doesn't seem to be the case. Steve Costa, BMUG's technical wizard, reports that Mac commercial and shareware anti-viral software won't work on the emulators. This will have to be reported to the InSpectre General! ■

WHAT IS BMUG?

BMUG is an educational non-profit consumer advocacy group organized to share information, and provide critical direction to users and developers in the computer community worldwide.

Like any growing organization, it is many different things to its international membership of 10,000. BMUG supports many Special Interest Groups (SIGs), an eight-line Bulletin Board System (BBS), a free HelpLine, software library, weekly meetings, publications, and much more. BMUG also puts out a semi-annual 400+ page book that we call our "newsletter."

Our motto continues to be: *We're in the business of giving away information.*

Come and join in the dialogue at the BMUG main meeting every Thursday evening, 6 to 9 pm (or whenever we finish), in the Physical Sciences Lecture Hall on the UC campus. BMUG West is a meeting held monthly in the Exploratorium, San Francisco's science museum.

The BMUG HelpLine, (415)849-HELP, and our fax number, (415)849-9026, provide technical assistance and telephonic hand-holding during business hours (11 am - 5:30 pm). If your question can't be answered on the spot, we try get you in touch with someone that can help. Of course, not every problem can have a happy ending—but we try.

BMUG has one of the most up-to-date, comprehensive software libraries around, with 400+ double-sided disks filled with the latest versions of public domain or shareware programs and HyperCard stacks. New disks are unveiled almost every week at the Thursday general meeting. BMUG also brings you the *PD ROM™ 2.0,* our entire library and more on CD-ROM—according to Apple, it's the best selling CD-ROM!

Our BBS offers many of the latest versions of files in our software library as well as news, private mail, rumors, etc. The BMUG BBS is part of the worldwide EchoMac Network on FIDOnet (161/444); by calling a local FIDOnet BBS in your area, you would then be able to get in touch with us wherever you are as well as send mail to users everywhere!

BMUG is now a part of the international USENET network (apple!bmug!user.name@sun.com) or (user.name@BMUG.FIDONET.ORG). With our multi-line capability you are now able to have access to BMUG almost 24 hours a day. It's easy to use, fun, and a great resource.

To get some further information about BMUG, please write to: BMUG, 1442A Walnut St. #62, Berkeley, CA 94709. If you prefer to phone our business office, call (415)549-BMUG, or FAX (415)849-9026.

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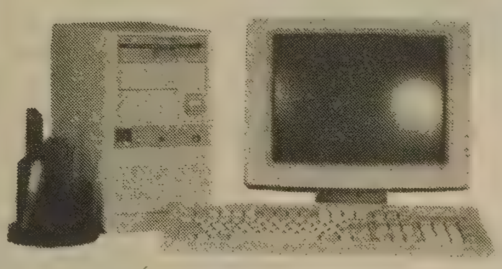

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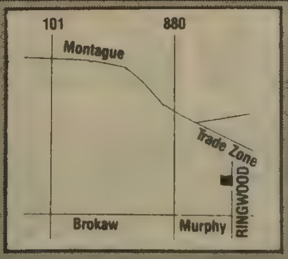

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Inside The A3000: RAM Upgrades

BY MATTHEW LEEDS

AMIGA

Often fables and myths take the form of cautionary tales, presenting a subtle warning to those who pay attention. In the high tech world, online services offer an abundance of stories that start out, "I didn't bother to read the manual..." or "it seemed like the logical thing to do at the time." User groups are another hotbed of such stories, generally told with great gusto, and either much pleasure over some other person's misfortune, or with some degree of chagrin over the teller's tribulations.

This was brought to mind recently while listening to a proud new A3000 owner's tale of woe over his attempts to install some very expensive RAM chips into his machine.

The A3000 will accept a confusing variety of different chips, of differing physical configurations, size, and performance. It also uses an unusual layout for the sockets that the chips are inserted into. All of the details and instructions are in the manual, but then, who reads manuals?

RAM AND THE A3000

There are two basic differences in the possible chips that most users will be adding. The first is the memory size of the chips, either 256Kbit or 1Mbit. The second is whether they are page mode or static column mode (SCRAM). I'll explain this shortly, but first I'd just like to suggest that if you ever find yourself about to add RAM to the motherboard of an A3000, first take a few moments to read the manual. Notice that unless you are adding 32 chips, you need to pay attention to which sockets the chips go into (they don't go in the order you might expect), and use some caution when applying force to seat the chips.

The A3000 is a 32-bit bus machine; it addresses memory 32 bits at a time. If it read one bit from a chip, you would need to add memory in sets of 32 chips, which would limit the possible memory configurations. By using chips that can be read four bits at a time, you can add memory in 8-chip increments. Such chips are known as "by fours," (256x4 or 1x4).

RAM chips can be thought of as postal boxes, each holding a single value. To read the value in a specific box, the system sends the row and column address of the box it wants to query, and the value is returned. Each box, or address, must be queried in turn to read a set of values. This is how standard RAM chips work.

SCRAM retains the column part of the address for the next several addresses. This means that only the row needs to be sent for each address, and this shortens the amount of time it takes to read a set of values from a contiguous set of addresses.

The 68030 used in the A3000 does not specifically understand about static column RAM, but it does have a special mode called "BURST", in which it will supply only a single address and then ask for up to the next three addresses in turn without supplying additional addresses. A special custom chip in the A3000 called "Ramsey" provides the interface support between SCRAM and the 68030. If the data requested by the 68030 is in sequential addresses, then large numbers of cycles can be saved and performance will greatly improve.

This does require that the program requesting the data store its data in sequential order. Well-written software will do so. There is, however, no way for the casual user to know if a specific program does this, or scatters data.

Back to the first difference. The A3000 will accept either 256x4 or 1x4 chips. Since you must install chips in sets of eight, eight 256x4 chips will add 1MB of memory to your machine, and eight 1x4 chips will add 4MB of memory. There are 32 sockets for chips; this allows a maximum of 4MB of 256x4 chips or 16MB of 1x4 chips to be added to the fast RAM banks (there is room for 1MB of chip memory in the chip RAM banks, but that's a story for another time).

The A3000 uses an odd type of RAM chip for its fast RAM. Users of MS-DOS clones may be familiar with DIP (dual inline package)

Continued on page 194

Copyright© 1990. All rights reserved. Matthew Leeds has been involved in the high tech field since he blew up his bedroom playing with a children's chemistry kit. He has been using Commodore computers since 1982 and has a strong interest in photography, video, graphics, and related fields.

The A3000 will accept a confusing variety of different chips, of differing physical configurations, size, and performance. It also uses an unusual layout for the sockets that the chips are inserted into. All of the details and instructions are in the manual, but then, who reads manuals?

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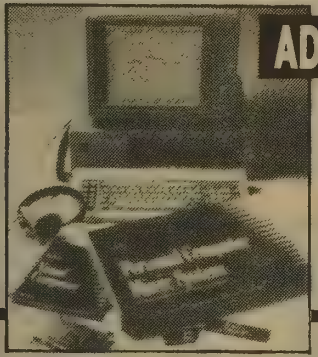

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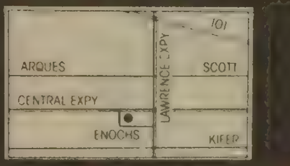

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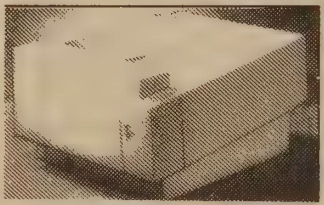

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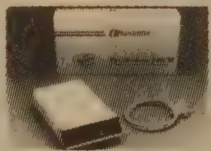

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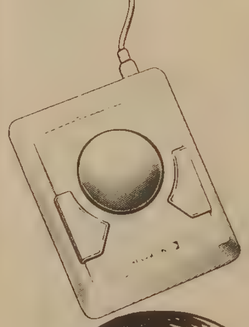

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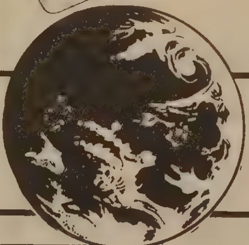

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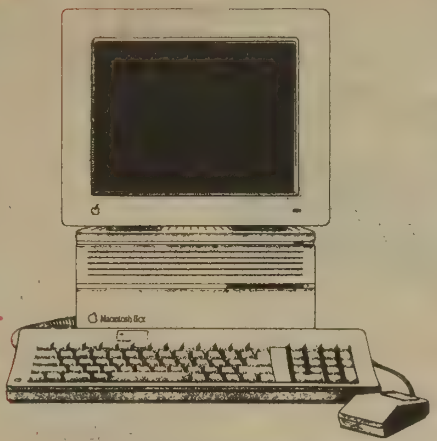

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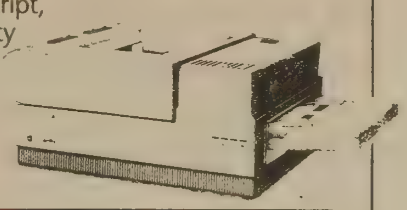

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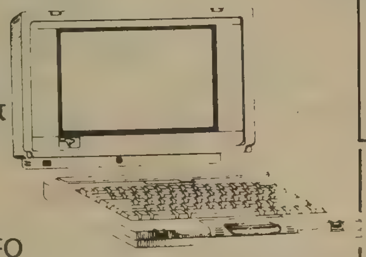

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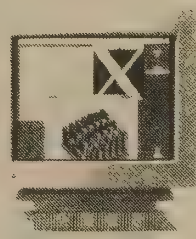

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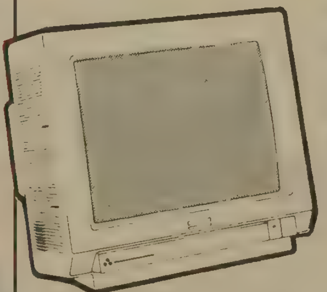

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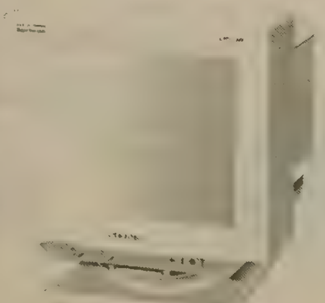

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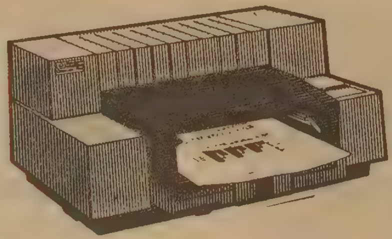

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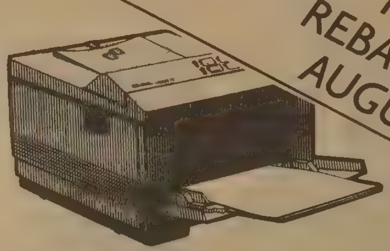

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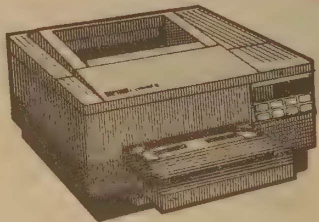

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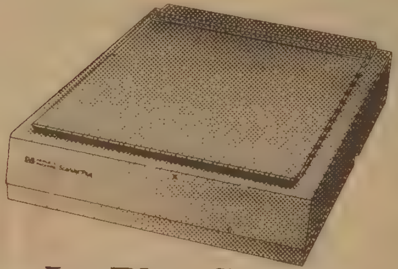

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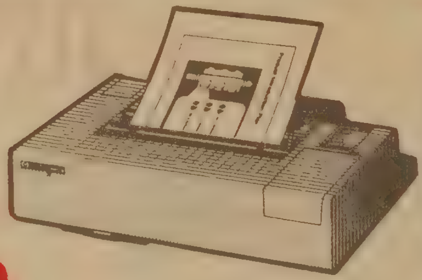

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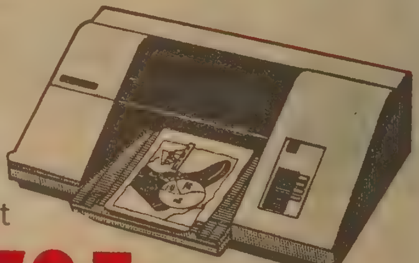

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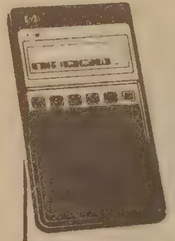

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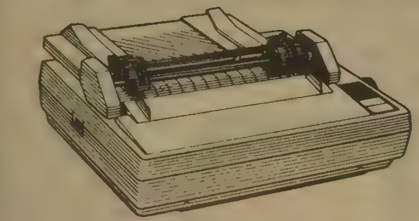

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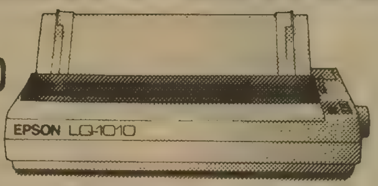

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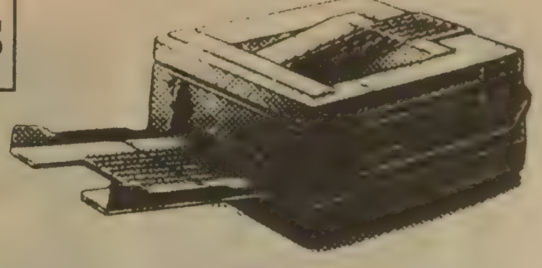

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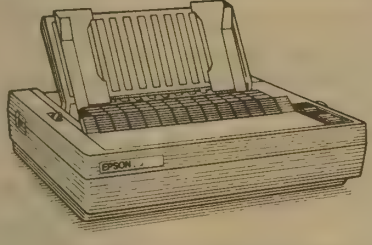

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- 180 CPS draft • 56 CPS letter quality • 2 resident letter quality fonts

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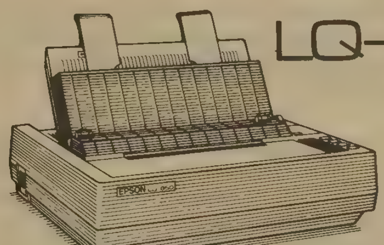
LQ-860



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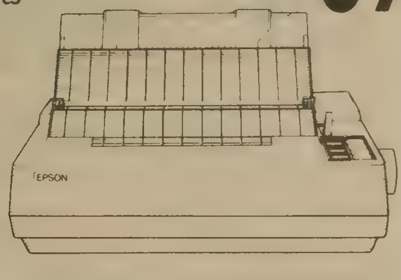

FX-850 • 9 pin dot matrix
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- 24 pin • EZ set control panel • 192 cps draft • 63 cps NLQ • 7 resident fonts • 16.5" wide carriage
- push/pull tractor
- 360 x 360 dpi graphics

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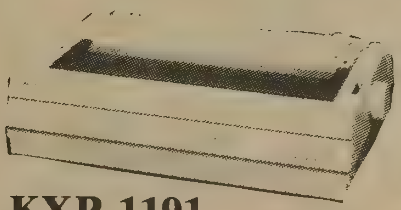

KXP-1191

- 9 pin • EZ set control panel
- 240 cps draft
- 48 cps NLQ
- 6 resident fonts
- push/pull tractor

259.

KXP-1124

- 24 pin • EZ set control panel
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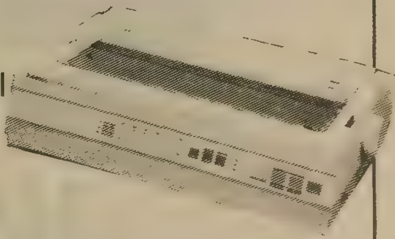
- 360 x 360 dpi graphics



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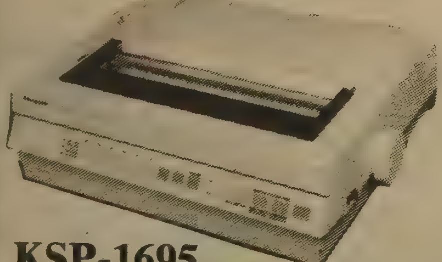

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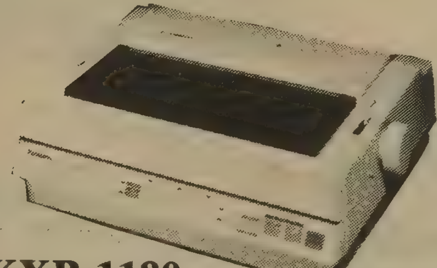

KXP-1180

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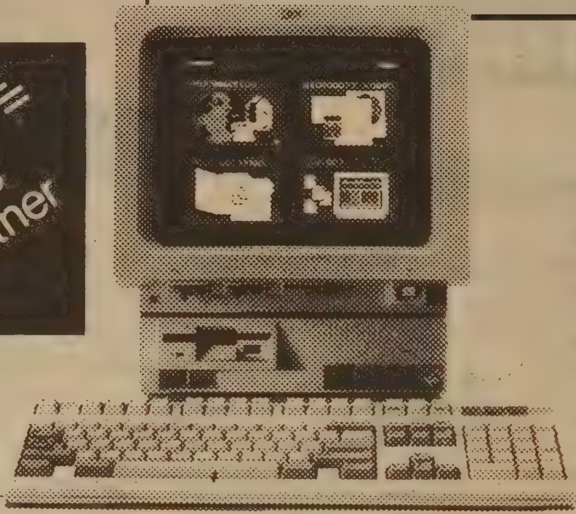

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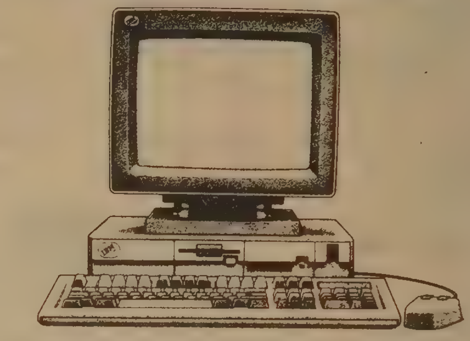

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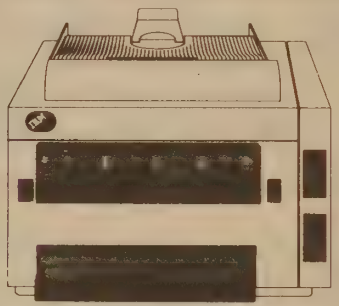

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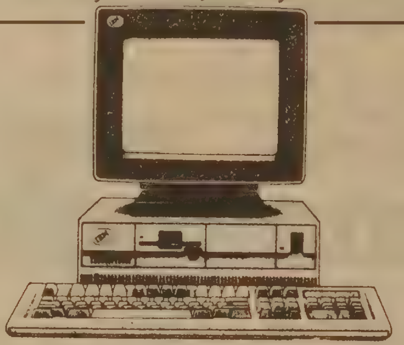

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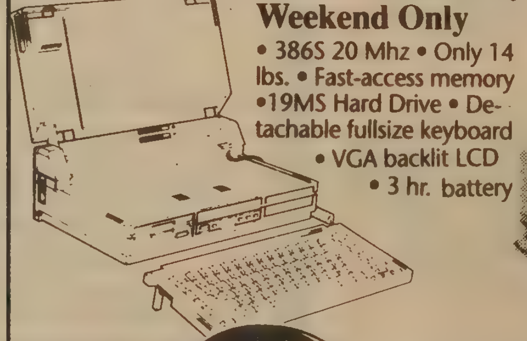

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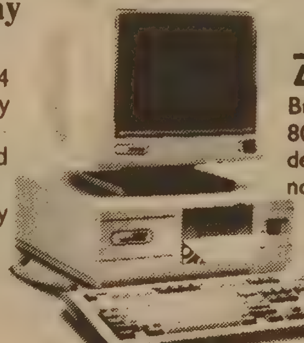

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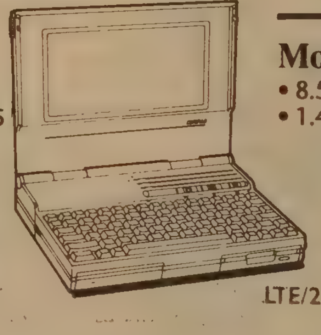

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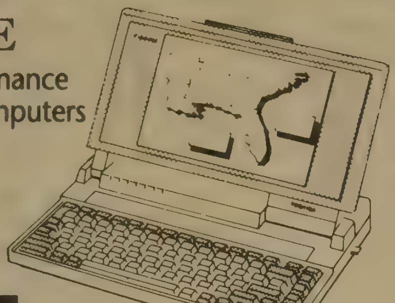

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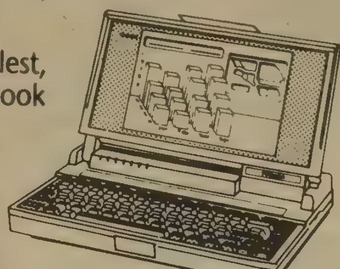

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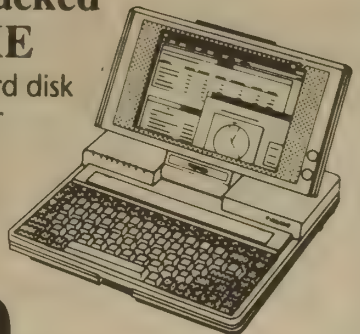

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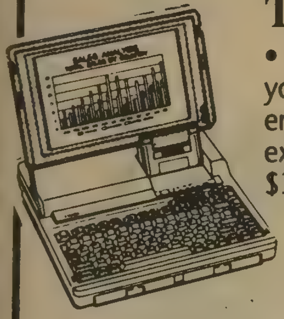

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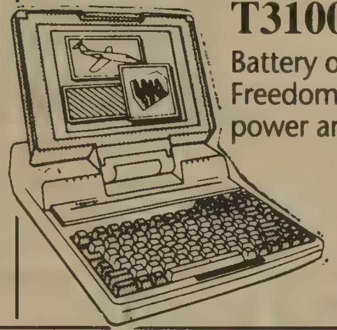

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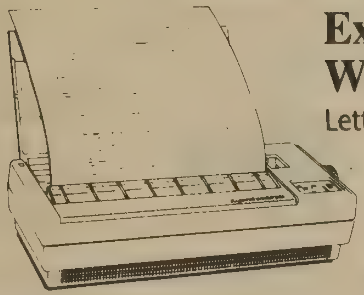

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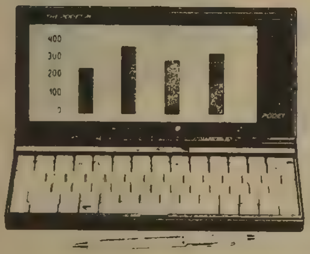

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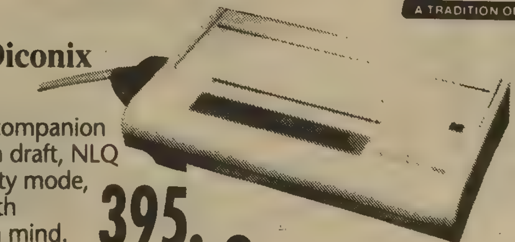

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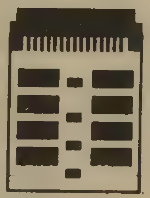

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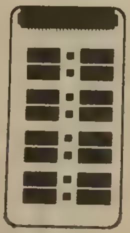

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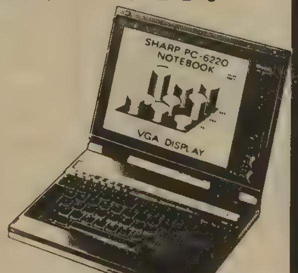

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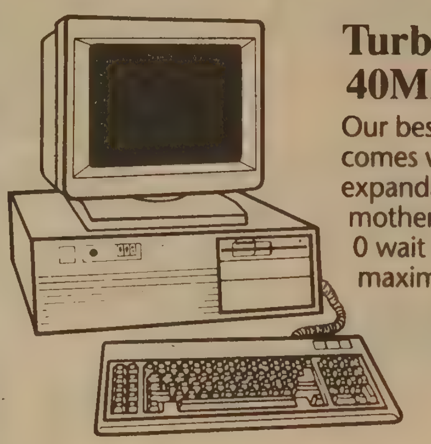

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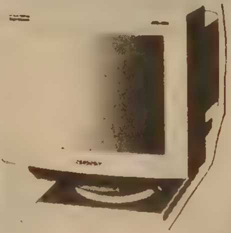

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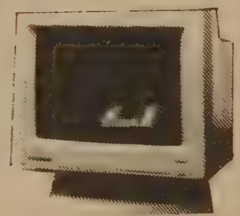

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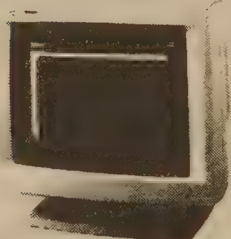

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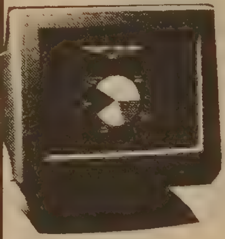

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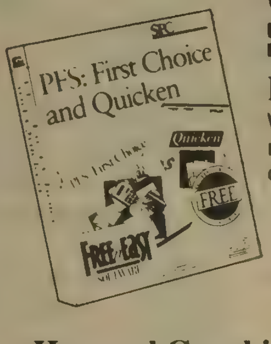

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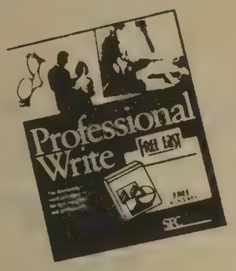

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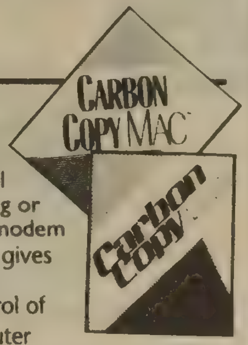

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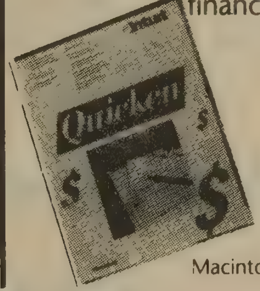

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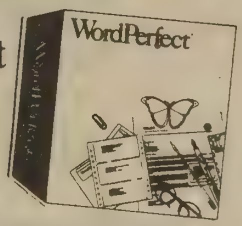

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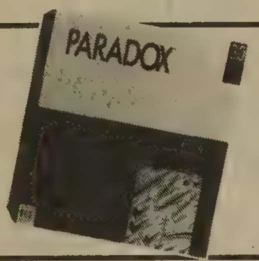

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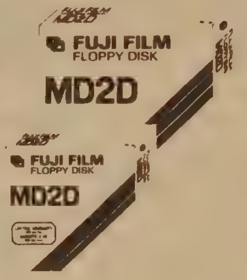

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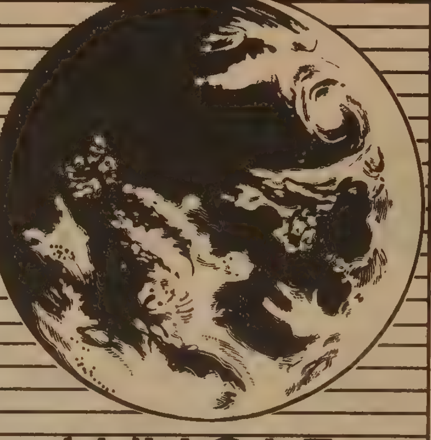

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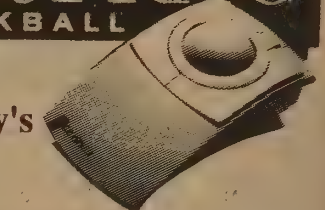

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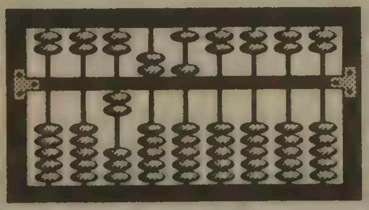

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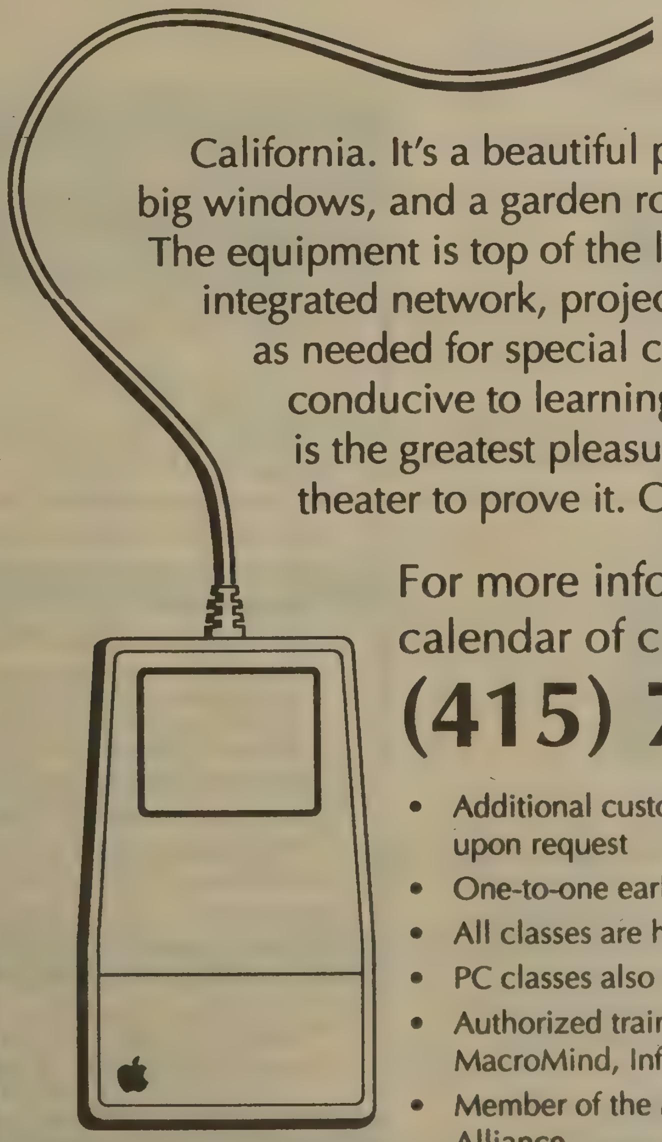

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Training Center

Continued from page 182

chips. These look like insects with pairs of legs on either side of the black plastic body. Mac users will probably only recognize SIMMs (single inline memory modules)—those small circuit boards with eight surface-mounted DIPs attached. But the A3000 uses ZIPs (zigzag inline package), which look like a DIP that mated with a pogo stick. The plastic package has all of the legs on one side, and they zig-zag slightly.

ZIPs are less common than DIPs, and SCRAM is less common than page mode RAM. The net result is that RAM for the A3000 is more expensive than for other machines. 256x4 SCRAM sells for around $10 and 1x4 SCRAM is generally over $60 per chip. Prices will come down over the next few months, but it's worth taking the time to shop around for the best deal.

IN OTHER NEWS...

AmiEXPO is coming to the Disneyland Hotel October 5-7 in Anaheim. This is the premier Amiga computer show, and usually well worth the trip. This year there will be over one hundred exhibitors as well as classes in Amiga graphics, video, multimedia, animation, rendering, and desktop publishing.

Public domain program of the month is Starburst, written by Willie Langeveld. It's a simple program, but it makes working on the Amiga under 2.0 much easier. The standard Amiga wildcard for a string of characters is "#?". This requires typing two keys while holding the Shift key down as well. It's a pain, and many people often forget which two keys are needed. Starburst lets you use the "*" instead. This is much easier, and has become somewhat of a standard for many. ■

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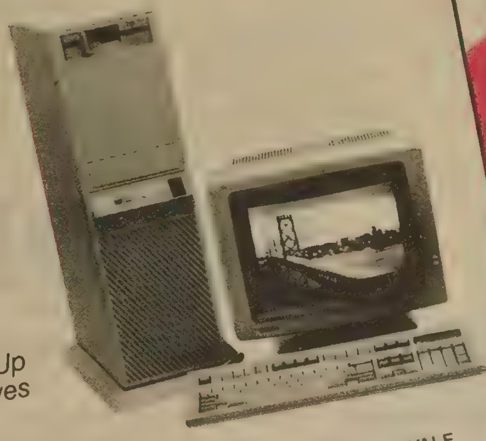

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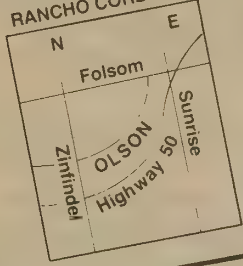

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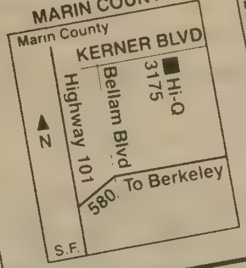

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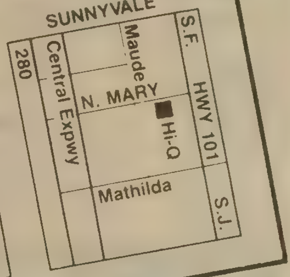

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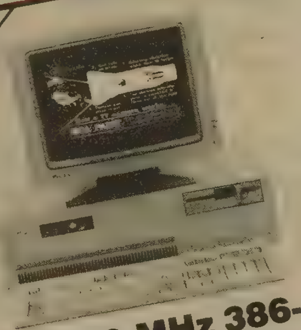

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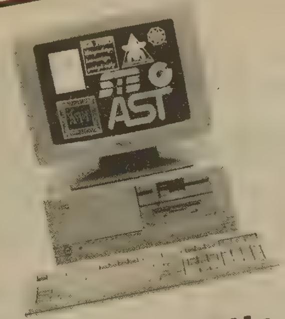

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MIDI And The ST

BY DAVID HAWKINS

ATARI ST

The Atari ST has two MIDI ports, which is a real help for those who want to use the ST for music. I've never written about MIDI in the past because I don't know much about music, but thanks to the Diablo Valley Atari Computer Enthusiasts (DACE) users group, I had a very informative conversation with Dan Galant, who's something of an expert on music and the ST.

If you want to learn more about music on the ST and about programs that are available, check with your local Atari user group. Someone with the group is probably working in music and might even play some music for you.

AVAILABLE SOFTWARE

There's a wide variety of music programs available for the ST. Some are sequencers, and are used to manipulate sounds. They allow you to pick the note and modify it on the computer screen before it is played. You can also change the handling of the notes throughout the musical piece. Notation programs take the sounds and put them into musical notation, when you want to print up a copy for other musicians to play from.

There are programs that combine some of the above abilities. For example, Notator from C-Lab is both a sequencer and a notation program. I used to think that some of the flight simulator games were complex, but it's amazing what someone can do with some of these music programs!

Also available are editing and librarian programs. Editing programs allow you to modify the sound in particular ways. The librarian program lets you store the different sounds you create—often thousands of individual sounds.

A lot of companies offer MIDI software for the ST. If you're interested in a sequencer, for example, you might want to check with a dealer or at a user group for recommendations. There are also magazine articles comparing a lot of the sequencers that are available.

In general, if you're new to the music/MIDI world, you might want to start with the programs from Hybrid Arts, since they are more designed for beginners and are less expensive. After you have some experience, you might want to look at the other programs, which have more features. Good programs are available from C-Lab and Dr. T's.

THEN THERE'S HARDWARE

What can you hook up to the ST? Any device that is equipped with a MIDI interface. It's even possible to daisy-chain a number of MIDI-equipped devices together and connect to the Atari.

One of the first pieces of equipment is a synthesizer. This lets you create sounds, which you can play with, edit, and store. You can get a synthesizer with a keyboard, or get a keyboard separately.

You can also add a drum machine. While you can do drum sounds with a synthesizer, it's helpful to have a device just for that one task. You may want a multi-track recorder at some point. There's quite a range of devices that have MIDI connections. Check with a local music store to see some of what is available.

This was probably obvious to everyone but me, but you'll need to hook all this up to speakers or headphones. I used to listen to music programs on the ST and wonder what the excitement was about. The speaker that's built into the monitor is not the best for listening to complex music.

WHAT ELSE?

There's still the hard part—to use MIDI on the ST, you'll still need to learn something about music. It is possible to compose, arrange, and record music at the professional level on the ST, but there's a certain amount of work that goes into learning it all first…

MORE READING

Various magazines that specialize in the Atari carry articles about MIDI and software and hardware on a regular basis. Also, for more information about the whole world of music and computers, check out *Electronic Musician* magazine.

QUOTE FOR THE MONTH

"All music jars when the soul's out of tune."

—*Miguel de Cervantes*

A lot of companies offer MIDI software for the ST. If you're interested in a sequencer, for example, you might want to check with a dealer or at a user group for recommendations.

Copyright © 1990 by David Hawkins. All rights reserved. David Hawkins is the host of the Atari conference on The WELL (415/332-6106); send email to dhawk. He has one of the first Atari ST 1040s sold in San Francisco. Both monitors, an Okimate 20 color printer, and disks are all over the room.

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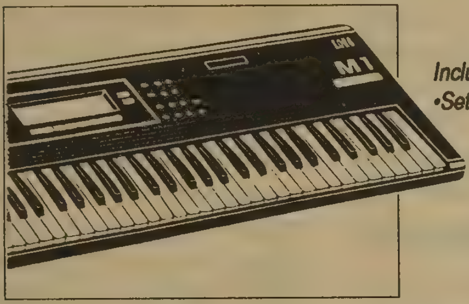

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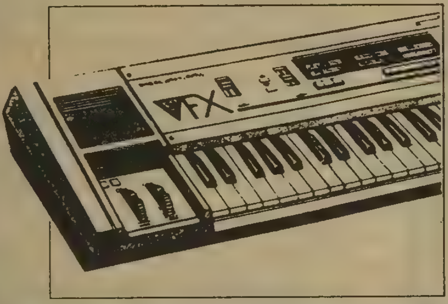

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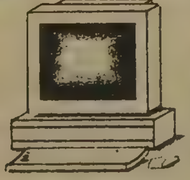

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STUDIO 1: Black & White Pixel Power

BY LENNY BAILES

Last year bitmap paint programs for the Macintosh took a quantum leap in sophistication, adding new tools for the control of shape construction, fill patterns, and object and text manipulation.

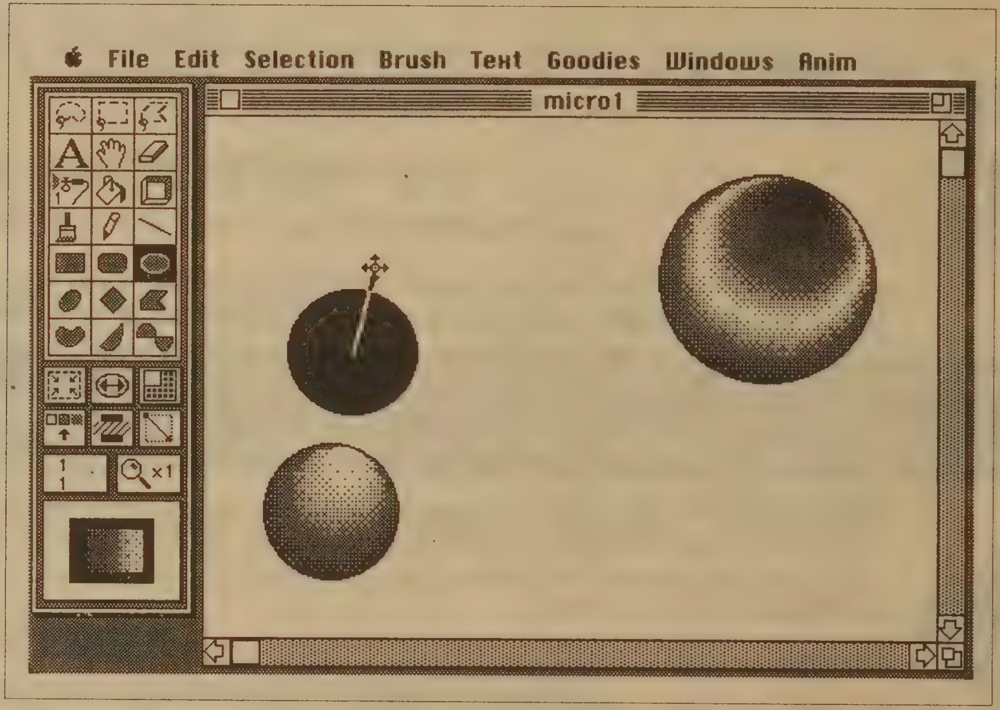
Studio 1 from Electronic Arts and SuperPaint from Silicon Beach exemplify this leap. Both programs provide superior tools for bitmap drawing. New features include tear-off palettes, adjustable lassos, polygon generators, bezier curve, shear and bend tools, and pattern gradients. In addition, SuperPaint easily handles vector drawings, while Studio 1 allows you to create animations.

Vector art is made from lines and arcs rather than individual pixels. Studio 1 will read these Encapsulated PostScript files, usually created in programs such as Adobe Illustrator or Aldus FreeHand, and turn them into black and white bitmap images. Studio 1 is designed as a tool for manipulating any black-and-white bitmapped image.

Building on the Electronic Arts concept that "anything can be a brush," any image can itself be lassoed and converted into a brush. With a brush, you can stamp or smear in opaques and transparencies over screens. Each screen—or frame for an animated presentation—can be played, rearranged and linked with digital sound samples to make presentations.

Studio 1 is no weakling as a paint tool, either. Like PowerPoint, it has a gradient pattern feature for three-dimensional shading, but only in black and white. The airbrush in Studio 1 has eight sizes. By adjusting the density and spray range, you can make even your squiggles look creative. Also, Studio 1 imports most Macintosh paint formats, while converting EPS and grayscale TIFF images into dithered black-and-whites.

The lasso and marquee tools can be modified to shrink or expand images. You can capture a foreground pattern, a foreground plus a surrounding frame pattern, or a foreground, frame and background pattern. The dynamic lasso allows greater flexibility in



Studio 1 has a gradient pattern feature for three-dimentional shading.

COMPARISONS WITH SUPERPAINT

Studio 1 and SuperPaint 2.0 have many similar features. The main difference, however, is Studio 1's animation features versus SuperPaint's method of handling bitmap and vector drawings.

In SuperPaint, a series of bezier curves can be selected and converted into a polygon. It autotraces bitmap art and exports Illustrator-compatible PostScript images. SuperPaint also will automatically draw 3D figures.

On the other hand, while Studio 1 can also draw beziers, these curves are only QuickDraw. Studio 1 constructs 3D shapes manually with a sequence of copy, paste and perspective moves. Although Studio 1 lacks SuperPaint's spiral generator and little plug-in brushes, it is easy to design your own brush tools in Studio 1

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Lenny Bailes is a teacher in the Bay Area, and has been writing about personal computers since 1987. He does part-time consulting and product testing, and can be reached on The WELL (415/332-6106) as "jroe" or at (415)285-6232.

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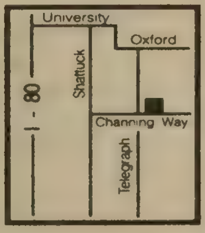

cutting and pasting various screen images.

The editing tools include a superset of the older generation of paint programs, making shape construction rapid and convenient. Regular polygons, for example, can be modified with a simple keystroke to increase the number of sides. Also, shapes appear with attached handles so that you can move, edit, and distort them.

Text in Studio 1 can be bitmapped or reserved for editing on a separate screen. Outline and shadow versions of installed fonts can be selected from the menu. The shear and perspective tools can be used to create curved-fitting PostScript-like effects.

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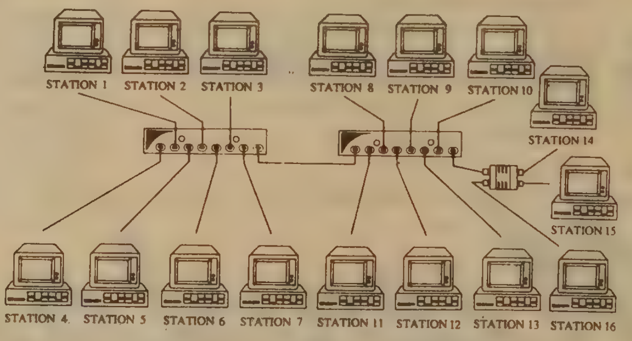

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ANIMATION

The brush features are the heart of Studio 1. Animation is created by stamping and smearing the brush across a series of frames. As in MacroMind Director, the frames can be set to play in any order and the intervals between frames can be varied. Digital sound bytes can be assigned to any frame.

Studio 1 is equipped with a series of "anim-brushes" to let a new user begin making animations right away. Each "anim-brush" is a collection of pre-drawn figures that work like cartoon flipbooks. By stamping the brush in each successive frame, pasting in the pre-drawn figures, you create a presentation which can be played back frame by frame.

Imported bitmaps or objects created in Studio 1 can also be pasted into animation frames. Studio 1 has built-in support for the Apple Scanner. Sequences of frames can be printed to make cartoon flipbooks (or step-by-step training materials).

Studio 1 includes pre-configured 3D motion templates to help you design impressive business presentations. Graphs, for example, can be animated with bouncing balls or rotating 3D logos. If you desire, you can roll your own 3D animation manually by integrating Studio 1's Perspective capability. A brush can be defined to travel a specific distance in three dimensions, or rotate around any of three axes. Brushes can be made from bitmap images created in Studio 1 or imported from other programs.

Animation presentations are played back outside of Studio 1 with a runtime slide viewer or linked to HyperCard scripts.

Gallery, the slide viewer, lets you create documents composed of individual PICT or MacPaint slides, or a complete Studio 1 animation sequence. You can establish transitions between slides and control the interval between them. Gallery also supports display of color slides created outside Studio 1. Electronic Arts grants permission to distribute Gallery with your animated presentations.

STUDIO 1 AS A TEACHER'S AIDE

I've found Studio 1 to be particularly useful as a replacement for HyperCard 1.2's tedious animation procedures. The library of built-in text rotation and 3D effects lets me create impressive screens for HyperCard tutorials without complicated scripting maneuvers.

Studio 1 includes a HyperCard demonstration stack. This is both an advertisement for the program, and a tutorial on how to use the

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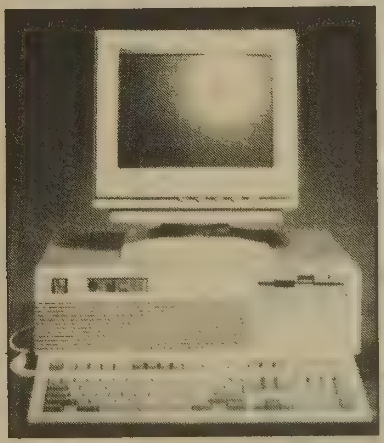
40MB Hard Disk	$285	$370	$650	$660	$755
80MB Hard Disk	$535	$620	$900	$910	$1005



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various HyperCard options. Animation is displayed in a full HyperCard window, or inside a rectangle within the screen. The Studio 1 demo stack will automatically copy its XCMD into your own stack. You don't need to use ResCopy or any other utility.

The XCMD options are:

- **Open** to load the animation into memory
- **Play** to play the animation
- **Back** to go backwards in the animation
- **GoTo** to jump to a given frame in the animation
- **Close** to release the memory being used by the animation

Each option includes user parameters. You can set the size of the animation on the screen; two animations can be played side by side; sound can be turned off or on. You're free to create your own stack buttons to play any sequence of frames in any order. The XCMD can also be activated by invoking it with HyperCard's "On Startup" or "On Open Card" script commands. The animation itself is an external file. It must accompany the stack in the same folder for this to work.

I used Studio 1 to build an animation around modems and telephone lines for a tutorial on telecommunications. I set the stack up so the animation would play whenever the stack was opened. I also put in a button option to replay the introduction inside of the stack.

As a paint program, Studio 1 holds its own in the world of black and white bitmaps. But it doesn't export gray levels or PostScript.

As an animation tool, Studio 1 has an easy learning curve. A variety of user templates are provided to help you get started. The manual is clearly written, and includes a tutorial on the more sophisticated animation features. The animation feature has a variety of uses: as a business tool, for entertainment, or as a teaching aid. ■.

RESOURCES:

Studio 1 $150
Electronic Arts
1820 Gateway Dr.
San Mateo, CA 94404
(415)571-7171

Superpaint 2.0 $199.95
Silicon Beach Software
9770 Carroll Center Rd., Ste. J
San Diego, CA 92126
(619)695-6956

Continued from page 72

What makes you think you can continue to make the right moves?

Qureshey: If you look at our background, it's from large systems. We came out of minicomputers and mainframes before starting AST. To us the cheaper architecture is what the minicomputer guys have sold all along. They buy a big box—they would buy it for fifty users. It can be expanded up to so many hundred users in the same box, and when the customer outgrows that one, he's got to buy a new one. That's the same thing we're offering.

We call our machines the new minicomputers. They can sit on your desk or your desk side. They can go from an entry level SX to a 486/33 by just unplugging the processor right in front of the customer.

If someone wants to upgrade to a 486, can they sell you back the old board?

Qureshey: Yes. That's what we have included in the exchange price.

One of the things people come up and tell us is, "Your 486 is expensive." I say, "Yes, it's expensive today. But if you're going to upgrade two years from now, then the upgrade price will be very low because the 486 will be cheaper."

That's what we have tried to answer. What we are doing for the customer is giving them a choice. You don't have to upgrade; you may be very happy with this machine with 386 or 486 for five years. But if you want to upgrade, you have a choice.

Is that capability growing in importance?

Qureshey: We see a difficulty for some of the customers because the technology is moving very fast: 286, then 386. The 386 has got three different speeds. The 486 has already got two speeds and the third speed is already on the way—50MHz. And then 66MHz. So, we are already working on these things.

So, these machines really will be providing the power of a mini. But isn't there another difference between micros and minis though, in I/O channels?

Qureshey: Yes. We're working on mass storage devices with as many as fourteen drives.

What is the implication for minicomputers then?

Qureshey: We're going to kill them. (AST Research, PO Box 19658, Irvine, CA 92714, 714/863-1333.) ■

486 *Power!*

486-25 *11.1 MIPS* $2999

- Intel 80486-25 CPU
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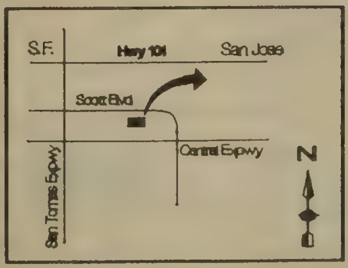

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RESOURCES

Calendar Of Events

SEPTEMBER

September 17 Wingz As An Office Solution Seminar. Menlo Park. Women's Computer Society. Call: Rita Zokaei, (415)574-8225.

September 17–19 NetWare 286 System Manager Class. San Francisco. Novell Education Services. Call: (415)764-1400.

September 18 MacDraw Class. San Francisco. Abacus, Inc. Call: Deborah Starnes, (415)759-9508.

September 18 HyperCard 2.0 Demonstration. Cupertino. MacSEF. Call: (408)733-0745.

September 18–21 CASE: Computer-Aided Software Engineering Course. San Francisco. Integrated Computer Systems. Call: John Valenti, 1-800-421–8166.

September 18–21 Image Processing & Machine Vision Course. San Francisco. Integrated Computer Systems. Call: John Valenti, 1-800-421-8166.

September 18–21 Project Management: Skills For Success Course. San Francisco. Integrated Computer Systems. Call: John Valenti, 1-800-421-8166.

September 19 Automated Accounting System Seminar. Fremont. Call: Victoria, (415)226-0881.

September 19 Lotus Seminar. San Francisco. 800–Software. Call: Lisa, (415)421-7013.

September 19 PageMaker Class. San Francisco. Computer Alliance. Call: (415)771-7133.

September 19 Architectural CAD On The Macintosh Seminar. Fremont. Computer Attic. Call: (415)770-1222.

September 19 How To Automate Your Business Accounting System Seminar. San Francisco. J.C. Lukrich and Co., CPA. Call: Suzette, (415)864-6770.

September 19 The Future In 2D/3D Graphical Software Presentation. Palo Alto. Software Entrepreneurs' Forum. Call: Barbara Cass, (415)854-7219.

September 20 Cricket Presents Class. San Francisco. Abacus, Inc. Call: Deborah Starnes, (415)759-9508.

September 20 Architectural CAD On The Macintosh Seminar. Cupertino. Computer Attic. Call: (408)253-5300.

September 20 Accounting Systems Seminar. Oakland. David A. Simon, CPA. Call: (415)893-5753.

September 20–21 NewWare 2.1 Update & Advanced Features Class. San Francisco. Novell Education Services. Call: (415)764-1400.

September 21 Graphics Class. San Francisco. Computer Alliance. Call: (415)771-7133.

September 22 Computer Swap. San Francisco. Computer Swap. Call: 1-800-433-7469.

September 22 Building A PC Clone From Scratch Class. Oakland. Excel Micro Solutions. Call: (415)836-2040.

September 22 Computer Show. San Francisco. Richard James. 1-800-433-7469.

September 22 How To Build Your Own XT Or AT Clone Computer For As Little As $600 Seminar. San Francisco. State University Extended Education. Call: (415)338-1205.

September 23 Computer Show & Sale. Santa Rosa. East-West Computer Shows. Call: (415)388-8893.

September 23–30 Animator Class. San Francisco. State University Extended Education. Call: (415)338-1205.

September 24 Computer Network Education Class. San Francisco. Abacus, Inc. Call: Deborah Starnes, (415)759-9508.

September 24–25 Train The Trainer Course. San Francisco. MacroMind. Call: (415)442-0200, ext. 225 or 222.

September 25 Intro To The Mac Class. San Francisco. Abacus, Inc. Call: Deborah Starnes, (415)759-9508.

September 25 New Directions In Connectivity Seminar. Palo Alto. Computer Attic. Call: (415)322-0639.

September 25 Ventura Publisher For Win-

continued

COMPUTERS IN COMPETITION

IICS 1990 Mark Of Excellence Awards

The International Interactive Communications Society is accepting applications through November 15, 1990. Interactive videodisc projects that have been completed prior to June 30, 1990 are eligible. Interactive applications will be judged in seven categories: Training, Education, Informational, Merchandising, Health Care Sciences, Simulation and Consumer. For information and applications contact: Al Pitts, Special Projects Chairperson, American Technology Resources, PO Box 21, Media, PA 19063. (215)565-6434.

1990 Northern California STC Technical Publications Competition, The Art Of The Scribe

The Society For Technical Communications is accepting applications through September 16, 1990. Hard copy and diskette entries must contain substantial technical, scientific, medical, or procedural information, or information about a technical organization. They must be written in English and suitable for public display. The categories include: Software Manuals, Quick Reference Guides, Hardware Manuals, and On-line Help Systems and Documentation. For information contact: June Schaefer, STC Technical Publications Competition, 1075 Madison Ave., Livermore, CA 94588.

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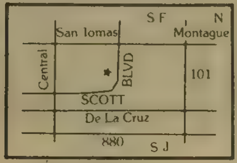

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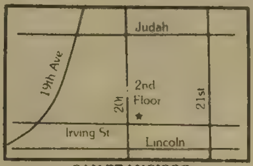

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DTC 7280 FD/HD CONTROLLER (1:1)	115
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DTC-6280D (1:1, ESDI)	145
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8087-2	130
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PS/2 30-286, 50 & 60	512K KIT	30F5348	$^{\$}75^{00}$
	2MB KIT	30F5360	190^{00}
PS/2 50Z & 55-SX	IBM SIMM	6450603	120^{00}
	(Above 55-sx only)		
	2MB SIMM	6450604	180^{00}
	(Above Installed on System Board)		
PS/2 70-E61 & 70-121	1MB SIMM	6450603	120^{00}
	2MB SIMM	6450604	180^{00}
PS/2 70-A21	2MB SIMM	6450608	190^{00}
	(Above Installed on System Board)		
	1MB SIMM	6450603	120^{00}
	2MB SIMM	6450604	180^{00}
	(Above Installed on Expansion Board #6450605)		
PS/2 80-041	1MB MODULE	6450375	179^{00}
PS/2 8-011 & 80-311	2MB MODULE	6450379	475^{00}
	(Above Installed on System Board)		
	1MB SIMM	6450603	120^{00}
	2MB SIMM	6450604	180^{00}
	(Above Installed on Expansion Board #6450605)		

AST Model	Memory Added	AST Part #	AMT Price
BRAVO/286	512K KIT	500510-010	$^{\$}70^{00}$
	2MB KIT	500510-002	185^{00}
	4MB KIT	500510-008	360^{00}
PREMIUM 286 ADVANCED	512K KIT	500510-001	70^{00}
	1MB KIT	500510-007	130^{00}
	2MB KIT	500510-002	190^{00}
	4MB KIT	500510-008	360^{00}
FASTBOARD 386	1MB KIT	500510-007	140^{00}
	4MB KIT	500510-008	360^{00}
PREMIUM WKST/286	512K KIT	500510-010	70^{00}
	2MB KIT	500510-002	185^{00}
PREMIUM WKST 386SX	512K KIT	500510-010	70^{00}
	1MB KIT	500510-007	135^{00}
	2MB KIT	500510-002	180^{00}
	4MB KIT	500510-008	360^{00}
PREMIUM 386/16	1MB KIT	500510-007	130^{00}
	4MB KIT	500510-008	360^{00}
PREMIUM 386	1MB KIT	500510-003	165^{00}
	4MB KIT	500510-004	379^{00}
PREMIUM 386c	1MB KIT	500510-007	130^{00}
	4MB KIT	500510-008	360^{00}
PREMIUM 386/25ex	1MB SIMM	500718-001	120^{00}
PREMIUM 386/33	1MB SIMM	500718-002	125^{00}

VIDEO RAM FOR VIDEO CARD	
64X4-150 NS 412642-15	$^{\$}4^{00}$
64X4-120 NS 412642-12	4^{50}
64X4-100 NS 412642-10	5^{00}

CACHE MEMORY 16X4

HM 6788-25	$^{\$}6^{50}$
MC 6288-35	9^{50}
64X4 CACHE MEMORY HM6708P25	24^{00}

S. RAM

8X8-10/12	CALL
32X8-10/12	CALL
1X1 10/12	CALL
2764-20/25	$^{\$}3^{50}$
27128-20	4^{50}
27256-20	5^{50}
27128-15	7^{50}
27-C512-25	10^{00}
27-C1024-15	20^{00}
XC 68030 RX-12	200^{00}

MATH COPROCESSORS	
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8087-2 MHz	116^{00}
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80287-6	130^{00}
80287-8	185^{00}
80287-10	199^{00}
80C87-12	255^{00}
80387SX-16	340^{00}
80387-16	299^{00}
80387-20	350^{00}
80387-25	440^{00}
80387-33	560^{00}

COMPAQ Model	Memory Added	COMPAQ Part #	AMT Price
DESKPRO 386/33	2MB MODULE	115144-001	$^{\$}330^{00}$
DESKPRO 386/20.25	1MB MODULE	113131-001	185^{00}
	4MB MODULE	113132-001	499^{00}
DESKPRO 386/20e	1MB BOARD	113644-001	285^{00}
	4MB BOARD	113645-001	635^{00}
	1MB MODULE	113131-001	185^{00}
	4MB MODULE	113132-001	499^{00}
DESKPRO 386s	1MB BOARD	113633-001	265^{00}
	4MB BOARD	113634-001	635^{00}
	1MB MODULE	113646-001	185^{00}
	4MB MODULE	112534-001	499^{00}
PORTABLE III	512K KIT	107331-001	55^{00}
	2MB KIT	107332-001	175^{00}
DESKPRO 386/16	4MB BOARD	108070-001	795^{00}
	8MB BOARD	108072-001	1325^{00}
PORTABLE 386	1MB KIT	107651-001	285^{00}
	4MB BOARD	107653-001	1050^{00}
SLT/286	1MB MODULE	110235-001	325^{00}

ZENITH Model	Memory Added	AMT Price
386/25	1MB KIT	$^{\$}139^{00}$
	2MB KIT	299^{00}
386/33	1MB KIT	139^{00}
	2MB KIT	299^{00}
	4MB KIT	499^{00}

CPU CHIPS	
80386 DX-16	$^{\$}250^{00}$
80386 DX-20	350^{00}
80386 DX-25	399^{00}
80386 DX-33	400^{00}
80386SX-16	250^{00}
V-20-8	6^{00}
V-20-10	10^{00}
V-30-10	10^{00}

APPLE Model	Memory Added	APPLE Part #	AMT Price
MAC II IIx IIcx & SE/30	1MB KIT	MO218	$^{\$}60^{00}$
	4MB KIT	MO2707	280^{00}
	16MB KIT		2799^{00}
MAC IIci	4MB MIT	MO292LL-A	315^{00}
	16MB KIT		2899^{00}
MAC SE & PLUS	1MB KIT	MO218	60^{00}
	2MB KIT	MO219	120^{00}
	4MB KIT	MO2707	250^{00}

HP LASER Model	Memory Added	HP Part #	AMT Price
LASER JET II	1MB MODULE	33443B	$^{\$}120^{00}$
	2MB MODULE	33444B	140^{00}
	4MB MODULE	33445B	299^{00}

MICROPROCESSORS	
68020 16MHz	$^{\$}129^{00}$
20MHz	169^{00}
25MHz	179^{00}
33MHz	199^{00}
68030 16MHz	129^{00}
25MHz	199^{00}
68010 8MHz	60^{00}

DRAM 1MGX1

1 MGX1-120NS	$^{\$}6^{00}$
1 MGX1-100 NS	6^{50}
1 MGX1-80 NS	6^{75}
1 MGX1-70 NS	9^{00}

DRAM 256X1

256X1-150 NS	$^{\$}1^{99}$
256X1-120 NS	2^{50}
256X1-100 NS	2^{75}
256X1-80 NS	2^{99}
256X1-70 NS	2^{99}
256X1-60 NS	3^{99}

DRAM 256X4

256X4-120 NS	$^{\$}6^{50}$
256X4-100 NS	7^{00}
256X4-80 NS	7^{50}
256X4-70 NS	7^{75}

MATH COPROCESSORS	
68881 12MHz	$^{\$}199^{00}$
16MHz	125^{00}
20MHz	155^{00}
68882 16MHz	169^{00}
25MHz	189^{00}
68010 10MHz	99^{00}

DRAM 64X1

4164-15	$^{\$}1^{50}$
4164-12	1^{99}
4164-10	2^{50}

DRAM 64X4

4464-150	$^{\$}2^{00}$
4464-120	2^{50}
4464-100	2^{75}
4464-80	3^{00}

256X1-STATIC COL

51258 P-10	$^{\$}2^{99}$
AAA 2800-08	3^{00}
AAA 2800-07	3^{25}
AAA 2800-60	4^{50}

WEITEK

3167-20	$^{\$}299^{00}$
3167-25	399^{00}
3167-33	600^{00}

STANDARD SIMMS	SALE
256KX8 150NS	$^{\$}20^{00}$
256KX8 120NS	22^{00}
256KX8 100NS	30^{00}
256KX8 80NS	34^{00}
256KX9 150NS	21^{00}
256KX9 120NS	23^{00}
256KX9 100NS	31^{00}
256KX9 80NS	37^{00}
256KX9 70NS	42^{00}
256KX9 60NS	44^{00}
256KX9 80NS S/C	36^{00}
256KX9 70NS S/C	40^{00}
256KX9 60NS S/C	44^{00}
1MX8 120NS	50^{00}
1MX8 100NS	52^{00}
1MX8 80NS	55^{00}
1MX8 70NS	59^{00}
1MX9 120NS	45^{00}
1MX9 100NS	55^{00}
1MX9 80NS	60^{00}
1MX9 70NS	62^{00}
1MX9 60NS	85^{00}
1MX9 100NS S/C	85^{00}
1MX9 80NS S/C	89^{00}
1MX9 70NS S/C	90^{00}
1MX9 60NS S/C	78^{00}
4MX8 80NS	300^{00}
4MX9 80NS	325^{00}

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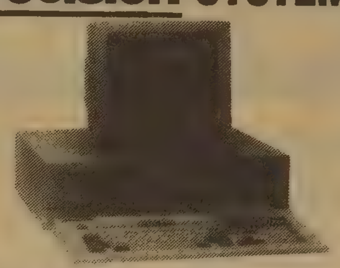
- Monochrome Monitor
- Enhanced AT Style Keyboard

Model IV-X25 w/20 CPU	**$1595**
25 MHz w/64K Cache	**$1795**
33 MHz w/64K Cache	**$1895**

ADDA Precision SYSTEMS



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Barebone Package
Case, Power & Motherboard
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Precision Model III-386SX16

386SX-16 MHz System	$845
w/20MB Hard Disk	$1045
w/40MB Hard Disk	$1145

Precision Model III-X16

16 MHz System	$625
w/20MB Hard Disk	$825
w/40MB 28ms	$925
Model III-X12	$575

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386SX-25
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Novell Networking		Call for Quote	
Arcnet Card (8 BIT)	$79	Arcnet Card (16 bit)	$149
Ethernet Card (8 BIT)	$149	Ethernet Card (16 bit)	$189
Arcnet Active Hub	$195	50 OHM Terminator	$5
Arcnet Passive Hub	$19	93 OHM Terminator	$5

MICE

Genius Mouse

GM-6X Serial Mouse, 3 button (50 to 800 DPI)	$39
GM-6000 Serial Mouse 2B/3B (350 to 1050 DPI)	$59
Logitech HiRez Mouse	$79

VGA PACKAGES

VGA-16 Plus VGA (Paradise Chip Set) 16 Bit w/256K, Special	$125
VGA Bundle 14" Standard VGA Monitor .41 Dot w/VGA 16- Card	$349
MVGA-1024 VGA (Paradise Chip Set) 1024x768 w/256K	$139
VGA WONDER ATI Fast 1024x768 w/256K	$189
ULTRA VGA BUNDLE #1 14" VGA Monitor 0.28 Dot Pitch w/VGA WONDER CARD Special	$545
ULTRA VGA BUNDLE #2 14" VGA Monitor 0.28 Dot Pitch w/MVGA-1024 Card	$495

Tape Backups

COLORADO SYSTEMS 40-120 MB TAPE BACK-UP

Self Contained & Menu Drive & File by File backup for PC/XT/AT & PS/2	$265
DC 2000XL 60 MB Tape	$29
Colorado Systems External Kit	$119

PC XT/AT KEYBOARD

Streamline 101 Key Keyboard With Templates

104 Key Tracball
(Microsoft Mouse Compatible)

Enhanced AT Keyboard	**$45**

MODEMS

Viva 24 External Modem

- w procomm software
- Tower Modem.....$119

ADDA Sendfax Modem

- 4800 bps Group III CALL
- 2400 bps Modem CALL

Precision MODEMS

2400 Baud Made in USA
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Internal	$79
External	$89

HARD DRIVE for PC/AT

20 Mb w/XT Controller	$259
40 Mb ST 251-1 (28mS)	$325
70 Mb By Micropolis (28mS)	$595
80 Mb ST-4096 (28mS)	$595
120 Mb by Maxtor (25mS)	CALL

CONNER IDE DRIVES

CP3044 42.6MB (25ms)
CP3104 104.9MB (25ms)
CP3184 80MB (25ms)
CP3204F 212MB (16ms)
CALL

POWER SUPPLY

150 Watt Power Supply For PC/XT	$49
200 Watt Power Supply For PC/AT	$69

SYSTEM SOFTWARE

MS DOS 3.3
MS DOS 4.01
w/GW BASIC
(slim version)
$ Call

TTL MONO MONITOR

TTL MONOCHROME MONITOR

Samsung Flat Screen Monitor 14" Screen, Flat Screen	$115
ADDA TTL MONITOR 12", hi-res	$79

ADD-ON CARDS

Mono Graphic/Printer Port	$29
IDE Controller w/2 Ser/ 1 Par	$69
OMTI 8250 1:1 (MFM)	$75
DTC 7280 1:1 (MFM)	$89
DTC 7287 1:1 (RLL)	$109
AT Cable Set	$9
AT Mini-I/O Card 2S/P/G.	$39
Printer Card	$15

ACCESSORIES

8087 CHIP	**$CALL**
80287 CHIP	**$CALL**
Serial Cable	**$15.00**
Printer Cable	**$12.00**
4-Way Data Box	**$49.00**
POWER DIRECTORY	**$39.00**

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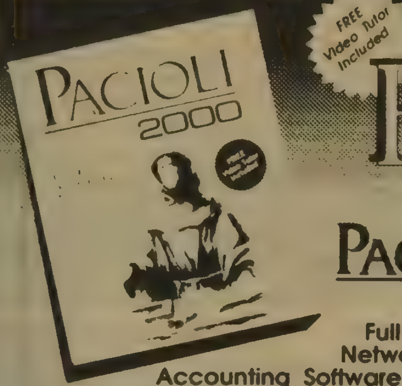

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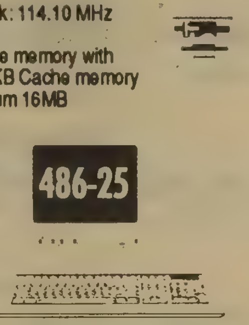
MICRO-L 486-25 Cache $3,045

Network Server

- Intel 80486-25MHz CPU, Lndmk: 114.10 MHz
- CMOS Set-up, MIPS: 11.104
- CPU Built-in 1st level 8KB Cache memory with 2nd level 128K expands to 256KB Cache memory
- 4MB RAM onboard with maximum 16MB
- Supports external Weitek 4167
- Eight 16-bit slots
- AMI 486 BIOS w/Shadow RAM
- 1.2MB & 1.44MB FDs (TEAC)
- 2 serial, 1 parallel, 1 game port
- 1:1 interleave controller
- Keytronics 101 keyboard (USA)
- Tower case
- 230W power supply



STANDARD SYSTEM W/MONITOR & VIDEO CARD

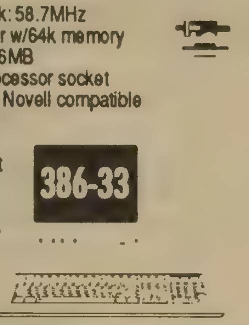
Monitor & Video Card	No Video & Monitor	14" VGA 640 x 480	14" Multiscan 800 x 600	15" Super Multiscan
Basic System	3,045	3,495	3,590	3,815
WITH HARD DRIVE				
158MB, 14ms - ESDI	4,040	4,490	4,585	4,810
338MB, 16ms - ESDI	4,495	4,945	5,490	4,810
768MB, 16ms - ESDI	5,095	5,545	5,640	5,865

*Maxtor Drive *Relisys Monitor

MICRO-L 386-33/Cache $1,665

Network Server

- Intel 80386-33MHz CPU, Lndmk: 58.7MHz
- 33Mhz Intel 82385 Cache Contlr w/64k memory
- 4MB RAM on-board with max 16MB
- 80387 Weitek WTL 3167 co-processor socket
- True OS/2, XENIX, MS DOS, & Novell compatible
- 8 exp. slots (1-32, 6-16, 1-8 bit)
- 1:1 interleave controller or IDE
- Phoenix BIOS, NEAT™ Chipset
- 1.2 MB & 1.44MB FDs (Teac)
- 2 serial, 1 parallel, 1 game port
- Keytronics 101 keyboard (USA)
- Tower case with 6 HHD
- 230W power supply
- MS DOS 3.3 or 4.01 included



STANDARD SYSTEM W/MONITOR & VIDEO CARD

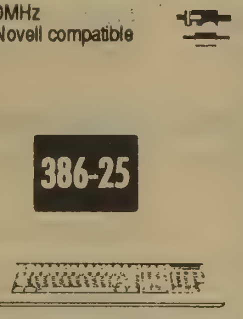
Monitor & Video Card	No Video & Monitor	14" VGA 640 x 480	14" Multiscan 800 x 600	HiRes VGA 1024 x 768 Seiko CM-1440
Basic System -	1,665	2,115	2,210	2,365
WITH HARD DRIVE				
80MB, 19ms - IDE	2,185	2,635	2,730	2,885
100MB, 19ms - IDE	2,245	2,695	2,790	2,945
158MB, 14ms - ESDI	2,660	3,110	3,205	3,360
338MB, 14ms - ESDI	3,115	3,565	3,660	3,815

*Maxtor Drive *Relisys Monitor

MICRO-L 386-25 $985

Business System

- 80386-25MHz CPU, Lndmk: 28.0MHz
- True OS/2, XENIX, MS DOS, & Novell compatible
- 1MB RAM expandable to 8MB
- 80387 co-processor socket
- 1.2 MB floppy drive (Teac)
- 1:1 interleave controller or IDE
- AMI BIOS, NEAT™ Chipset
- 8 expansion slots
- 2 serial, 1 parallel, 1 game port
- Keytronics 101keyboard (USA)
- 5-drive AT case with security lock, LED indicators
- 230W power supply
- Tower Case add $85



STANDARD SYSTEM W/MONITOR & VIDEO CARD

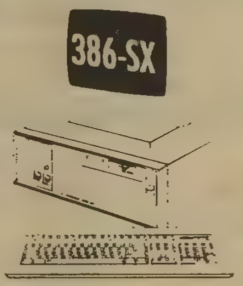
Monitor & Video Card	No Video & Monitor	14" VGA 640 x 480	14" Multiscan 800 x 600	HiRes VGA 1024 x 768 Seiko CM-1440
Basic System -	985	1,435	1,530	1,685
WITH HARD DRIVE				
40MB, 27ms - IDE	1,235	1,685	1,780	1,935
80MB, 19ms - IDE	1,505	1,955	2,050	2,205
100MB, 19ms - IDE	1,565	2,015	2,110	2,265

*Maxtor Drive *Relisys Monitor

MICRO-L 386-SX $625

Executive System

- 80386/SX-16 CPU runs 16MHz
- 80387 co-processor socket
- 1MB RAM expandable to 8MB
- 1.2 MB floppy drive (Teac)
- True OS/2, XENIX, MS DOS, and Novell compatible
- AMI BIOS, NEAT™ Chipset
- 1:1 interleave HD/FD IDE cntrlr
- 8 expansion slots
- 2 serial, 1 parallel, 1 game port
- Keytronics 101 keybd (USA)
- Deluxe baby-AT case w/200W P/S



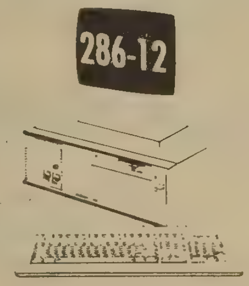
STANDARD SYSTEM W/MONITOR & VIDEO CARD

Monitor & Video Card	No Video & Monitor	12" VGA Mono	14" VGA 640 x 480	14" Multiscan 800 x 600
Basic System -	625	850	1,075	1,170
WITH HARD DRIVE				
40MB, 27ms - IDE	875	1,100	1,325	1,420
80MB, 25ms - IDE	1,145	1,370	1,595	1,690
100MB, 25ms - IDE	1,205	1,430	1,655	1,750

MICRO-L 286-12 $425

Desktop System

- 80286-12.5MHz CPU
- True OS/2, XENIX, MS DOS, and Novell compatible
- 80287 co-processor socket
- 1MB RAM expandable to 4MB
- 1.2 MB floppy drive (Teac)
- AMI BIOS, VLSI
- 1:1 interleave HD/FD IDE controller
- 8 expansion slots
- 2 serial, 1 parallel, 1 game port
- 101 Enhanced keyboard
- Deluxe baby-AT case
- with 200W power supply



STANDARD SYSTEM W/MONITOR & VIDEO CARD

Monitor & Video Card	No Video & Monitor Included	12" Flat Mono 720 x 350	14" VGA 640 x 480 Relysis	14" VGA Multiscan Relysis
Basic System -	425	525	875	970
WITH HARD DRIVE				
20/MB, MFM	625	725	1,075	1,170
40MB, 27ms - IDE	675	775	1,125	1,220
80MB, 19ms - IDE	945	1,045	1,395	1,490

MOTHERBOARDS

486-25 AT w/64k upto 16MB	$2,265
386-33 w/64K CACHE w/CPU	$890
386-25 w/64K CACHE w/CPU	$780
386-25 w/CPU	$595
386-SX/16	$310
286-16 NEAT	$205
286-12 VLSI	$105
XT 10MHz VIP	$60
Memory Chips	Call

PRINTERS

Panasonic KX-P1180 9-pin	$155
Panasonic KX-P1124 24-pin	$269
Panasonic KX-P1624 24-pin	$345
Panasonic KX-P1695 24-pin	$375
Panasonic KX-P4450i 24-pin	$1,275
Citizen GSX-140 24-pin	$279

HP LASERJET MEM UPGRADES

JetRam II-2MB,4MB	$165/$275
JetRam IID-2MB,4MB	$175/$285
JetRam IIP-1MB,2MB,4MB	$135/$190/$355
JetRam III-1MB,2MB,4MB	$145/$195/$365

HARD DRIVES

Maxtor XT-1085 71MB	$529
Maxtor XT-4170E 158MB	$875
Maxtor XT-4380E 338MB	$1300
Maxtor XT-8760E 768MB	$1995
Conner CP-3044 40MB	$315
Conner CP-3184 80MB	$495
Conner CP-3104 100MB	$560
Conner CP-3204 200MB	$795
WD IDE 40MB w/adapter, cable	$275

MONITORS

Relisys VGA RE-9513	$315
Relisys Multiscan RE-5155	$405
Relisys Super Multiscan RE-1520	$580
Relisys VGA Gry-Scl RE-9503	$120
Seiko VGA 1024X768 CM-1440	$515
Genoa VGA Card 6300 (256K)	$125
Genoa VGA Card 6400 (512K)	$140

MISCELLANEOUS

TEAC 1.2/1.44 MB FD	$69/$69
TEAC 360/720KB FD	$59/$59
Logitech C-9 Serial mouse	$62
Logitech Bus mouse	$72
Logitech Trackman™ Serial	$75
DFI Handyscanner HS-3000+	$135
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Colorado Jumbo Tape Back-up	$255
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Calendar Of Events *continued*

dows Presentation. San Francisco. San Francisco Business Computers. Call: (415)788-5338.

September 25 Intro To Novell Seminar. San Francisco. State University Extended Education. Call: (415)338-1205.

September 25–28 Embedded Systems Conference. Burlingame. Embedded Systems Programming. Call: (415)995-2471.

September 25–28 C Advanced Programming & Data Structures Course. San Francisco. Integrated Computer Systems. Call: John Valenti, 1-800-421-8166.

September 25–28 Multivendor Networking Course. San Francisco. Integrated Computer Systems. Call: John Valenti, 1-800-421-8166.

September 25–28 Network Cabling And Wiring Techniques Course. San Francisco. Integrated Computer Systems. Call: John Valenti, 1-800-421-8166.

September 25–27 PC Expo. Chicago. H.A. Bruno, Inc. Call: 1-800-444-3976.

September 26 Microsoft Word Class. San Francisco. Abacus, Inc. Call: Deborah Starnes, (415)759-9508.

September 26 How To Automate Your Business Accounting System Seminar. San Francisco. J.C. Lukrich and Co., CPA. Call: (415)864-6770.

September 26 Paradox 3.0 Basics Class. San Francisco. State University Extended Education. Call: (415)338-1205.

September 26 Intro To NMOS/CMOS And BIMOS Lecture. Techmart. UC Extension. Call: (408)562-5711.

September 26–27 Interactive Multimedia Seminar. San Francisco. MacroMind. Call: (415)442-0200, ext. 225 or 222.

September 27 Microsoft Excel Class. San Francisco. Abacus, Inc. Call: Deborah Starnes, (415)759-9508.

September 28 PageMaker Seminar. San Francisco. Abacus, Inc. Call: Deborah Starnes, (415)759-9508.

September 28 DeltaGraph Charts Class. San Francisco. Abacus, Inc. Call: Deborah Starnes, (415)759-9508.

September 28 HyperCard Scripting Class. San Francisco. Abacus, Inc. Call: Deborah Starnes, (415)759-9508.

September 28 Microsoft Works Class. San Francisco. Computer Alliance. Call: (415)771-7133.

September 28–29 Sources 1990: Asian Financing For Emerging Companies Conference. Santa Clara. Asian American Manufacturers Assoc. Call: (415)321-2262.

September 29 Word I Class. San Francisco. Computer Alliance. Call: (415)771-7133.

September 29 Computer Show. Oakland. Richard James. 1-800-433-7469.

September 29 Computer Swap. Oakland. Computer Swap. Call: 1-800-433-7469.

September 29 Computer Show & Sale. San Mateo. East-West Computer Shows. Call: (415)388-8893.

September 29 Money Managers Technical Forum. San Jose. JDR Microdevices. Call: Dan Urioste, (408)947-8881.

September 30 Automating Your Business Seminar. San Ramon. R:Base Users Group Of The East Bay. Call: (415)451-5316.

September 30–October 2 The 1990 Ventura Publisher Seminar. San Jose. Ventura Publisher User Group. Call: Bob Moody, (408)227-5030.

OCTOBER

October 1 MS DOS For CAD, Level 1 Class. San Francisco. State University Extended Education. Call: (415)338-1205.

October 2 Defining And Achieving Quality Publications Lecture. Techmart. UC Extension. Call: (408)562-5711.

October 2–5 SQL: Hands-on Workshop. San Francisco. Integrated Computer Systems. Call: John Valenti, 1-800-421-8166.

October 2–5 Basic AutoCAD Class. San Francisco. State University Extended Education. Call: (415)338-1205.

October 2–5 1990 Seybold Computer Publishing Conference & Expo: The Evolving Process Of Communication. San Jose. Seybold Seminars. Call: (213)457-5850.

October 3 Word I Class. San Francisco. Computer Alliance. Call: (415)771-7133.

October 4 PageMaker I Class. San Francisco. Computer Alliance. Call: (415)771-7133.

October 4 ISDN: An Intro To Services And Networks Lecture. Techmart. UC Extension. Call: (408)562-5711.

October 4 NetWare Intro To LAN Class. San Francisco. Novell Education Services. Call: (415)764-1400.

October 4–6 "The Next Wave" In Newspaper Design Convention. San Francisco. Society in Newspaper Design. Call: (415)777-7968.

October 5 Using Presentation Visuals In Training Workshop. Techmart. UC Extension. Call: (408)562-5711.

October 6 Basic Mac Class. San Francisco. Computer Alliance. Call: (415)771-7133.

October 6 IBM PC Clone Troubleshooting And Repair Class. Oakland. Excel Micro Solutions. Call: (415)836-2040.

continued

OCTOBER 2–5

The Evolving Process Of Communication 1990 Seybold Computer Publishing Conference & Exposition

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OPTIMA	No Mtr/Card Included	12" Mono 720x348	14" Mono 720x348	14" VGA Mono 640x480	14" VGA Color 640x480	14" SuperVGA 1024x768	14" EGA 640x350
AX12286(286/12, 512K)							
BasicSystem,Desktop	$399	$489	$539	$639	$789	$849	$749
w/ 40 MB WD drive	$699	$789	$839	$939	$1,089	$1,149	$1,049
w/ 80 MB CONNER drive	$949	$1,039	$1,089	$1,189	$1,339	$1,399	$1,299
SX16386 (386SX/16)							
BasicSystem,Desktop	$649	$739	$789	$889	$1,039	$1,099	$999
w/ 40 MB WD drive	$949	$1,039	$1,089	$1,189	$1,339	$1,399	$1,299
w/ 65 MB NEC drive	$1,049	$1,139	$1,189	$1,289	$1,439	$1,499	$1,399
w/ 80 MB CONNER drive	$1,199	$1,289	$1,339	$1,439	$1,589	$1,649	$1,549
M16386 (386SX/16)							
Basic System, Slim Case	$699	$789	$839	$939	$1,089	$1,149	$1,049
w/ 40 MB WD drive	$999	$1,089	$1,139	$1,239	$1,389	$1,449	$1,349
w/ 65 MB NEC drive	$1,099	$1,189	$1,239	$1,339	$1,489	$1,549	$1,449
w/ 80 MB CONNER drive	$1,249	$1,339	$1,389	$1,489	$1,639	$1,699	$1,599
AX25386 (386/25)							
Basic System, Mini Vertical	$999	$1,089	$1,139	$1,239	$1,389	$1,449	$1,349
w/ 40 MB WD drive	$1,299	$1,389	$1,439	$1,539	$1,689	$1,749	$1,649
w/ 65 MB NEC drive	$1,399	$1,489	$1,539	$1,639	$1,789	$1,849	$1,749
w/ 80 MB CONNER drive	$1,549	$1,639	$1,689	$1,789	$1,939	$1,999	$1,899
CX25386 (386/25, 32K cache)							
Basic System, Med Vertical	$1,199	$1,289	$1,339	$1,439	$1,589	$1,649	$1,549
w/ 65 MB NEC drive	$1,599	$1,689	$1,739	$1,839	$1,989	$1,949	$1,949
w/ 80 MB CONNER drive	$1,749	$1,839	$1,889	$1,989	$2,139	$2,199	$2,099
w/ 100 MB CONNER drive	$1,849	$1,939	$1,989	$2,089	$2,239	$2,299	$2,199
CX33386 (386/33, 64K cache)							
Basic System, Full Vertical	$1,399	$1,489	$1,539	$1,639	$1,789	$1,849	$2,049
w/ 65 MB NEC drive	$1,799	$1,889	$1,939	$2,039	$2,189	$2,249	$2,449
w/ 80 MB CONNER drive	$1,949	$2,039	$2,089	$2,189	$2,339	$2,399	$2,599
w/ 100 MB CONNER drive	$2,049	$2,139	$2,189	$2,289	$2,439	$2,499	$2,699
CX25486 (486/25)							
Basic System, Full Vertical	$3,199	$3,289	$3,339	$3,439	$3,589	$3,649	$3,549
w/ 80 MB CONNER drive	$3,749	$3,839	$3,889	$3,989	$4,139	$4,199	$4,099
w/ 100 MB CONNER drive	$3,849	$3,939	$3,989	$4,089	$4,239	$4,299	$4,199
w/ 200 MB CONNER drive	$4,099	$4,189	$4,239	$4,339	$4,489	$4,549	$4,449

All Basic Systems (excluding Portables)include the following: 1 MB RAM (except AX12286), 5.25" 1.2 MB or 3.5" 1.44 MB floppy drive, dual floppy/1:1interleave hard drive controller, 2 serial ports,1 parallel port, case and power supply, 101 enhanced keyboard,one year parts and labor warranty.

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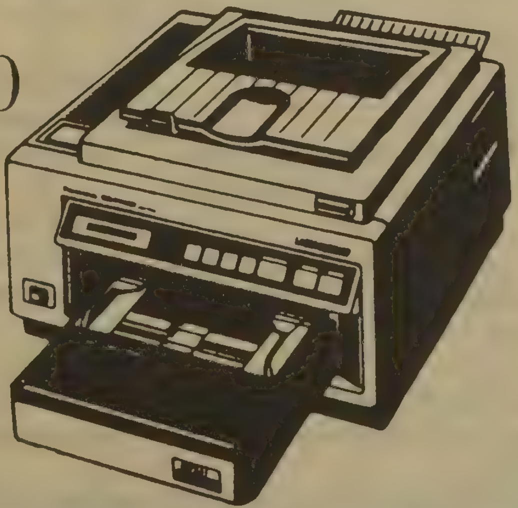

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Calendar Of Events *continued*

October 6 Computer Show. San Jose. Richard James. 1-800-433-7469.

October 8 MS DOS For CAD, Level 2 Class. San Francisco. State University Extended Education. Call: (415)338-1205.

October 8–11 Novell Service And Support Class. San Francisco. Novell Education Services. Call: (415)764-1400.

October 8–12 Interop '90 Expo. San Jose. Interop, Inc. Call: 1-800-INTEROP, ext. 200.

October 9 HyperCard I Class. San Francisco. Computer Alliance. Call: (415)771-7133.

October 9 The Business Of Learning Presentation. Cupertino. IICS. Call: (408)866-7941.

SEPTEMBER 22

Mr. Floppy Returns

Burlingame

Mr. Floppy is returning to Computer Spectrum to explain how to take proper care of your computer. He will discuss computer diskettes, how to protect your computer from viruses and tips on the latest computer games. Computer Spectrum, 1243 Howard Ave., Burlingame. (415)347-4576.

October 9 How To Automate Your Business Accounting System Seminar. San Francisco. J.C. Lukrich and Co., CPA. Call: Suzette, (415)864-6770.

October 9–11 3rd Annual Multimedia Expo. San Francisco. American Expositions, Inc. Call: (212)226-4141.

October 9–12 Hands-on Intro: Microprocessor Software, Hardware And Interfacing Class. San Francisco. Integrated Computer Systems. Call: John Valenti, 1-800-421-8166.

October 10 POS For Retail Business Seminar. Fremont. Call: Victoria, (415)226-0881.

October 10 Project Management Comparison Seminar. San Francisco. 800–Software. Call: 1-800-888-4880.

October 10 Newsletter Class. San Francisco. Computer Alliance. Call: (415)771-7133.

October 10 Real Estate Management With IBM's Platinum Series: Computer Seminar. San Francisco. Howard M. Haberman Associates, Inc. Call: (415)641-0850.

October 10 Intro To LANs: A Hands-on Workshop. Techmart. UC Extension. Call: (408)562-5711.

October 10–11 Microprocessor Forum. San Francisco. Microprocessor Report. Call: 1-800-527-0288.

October 11–12 Interactive Multimedia Seminar. San Francisco. MacroMind. Call: (415)442-0200, ext. 225 or 222.

October 13 Graphics Class. San Francisco. Computer Alliance. Call: (415)771-7133.

October 13 Computer Mart. Cupertino. De Anza College. Call: (408)864-8581.

October 13 Computer Show & Sale. Vallejo. East-West Computer Shows. Call: (415)388-8893.

October 13 Computer Show. San Francisco. Richard James. 1-800-433-7469.

October 14 Computer Show & Sale. Hayward. East-West Computer Shows. Call: (415)388-8893.

October 16 Fundamentals Of X.25 Lecture. Techmart. UC Extension. Call: (408)562-5711.

October 16–November 2 Hands–on UNIX Systems And Applications Programming In C Course. San Francisco. Integrated Computer Systems. Call: John Valenti, 1-800-421-8166.

October 17 The Basics Of Desktop Publishing Seminar. Oakland. Padgett-Thompson. Call: 1-800-255-4141 or (913)451-2900.

October 17 The Software Dealer Channel Of The Future Seminar. Palo Alto. SEF. Call: Barbara Cass. (415)854-7219.

October 17 Topic Document Search And Retrieval Seminar. Techmart. Verity. Call: (415)960-7600.

October 18 Accounting Systems Seminar. Oakland. David A. Simon, CPA. Call: (415)893-5753.

October 18 The Basics Of Desktop Publishing Seminar. San Francisco. Padgett-Thompson. Call: 1-800-255-4141 or (913)451-2900.

October 19 The Basics Of Desktop Publishing Seminar. San Jose. Padgett-Thompson. Call: 1-800-255-4141 or (913)451-2900.

October 19 Intro To Novell NetWare Lecture. Techmart. UC Extension. Call: (408)562-5711.

October 20 Excel Class. San Francisco. Computer Alliance. Call: (415)771-7133.

October 20 Troubleshooting A Novell Network Class. Oakland. DataNet. Call: 1-800-879-4181.

October 20 Desktop Color Pre-Press Lecture. Techmart. Desktop World, Inc. Call: (415)549-0678.

October 22 IBM-SmartWare II Ideas Lecture. Techmart. Infotec Training Institute. Call: (408)562-6272.

October 22–23 Intro To Data Communications Class. San Francisco. Novell Education Services. Call: (415)764-1400.

October 22–24 Electronic Messaging '90: Beyond Interpersonal Correspondence

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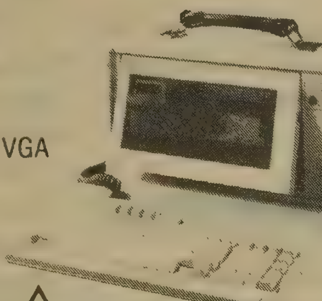

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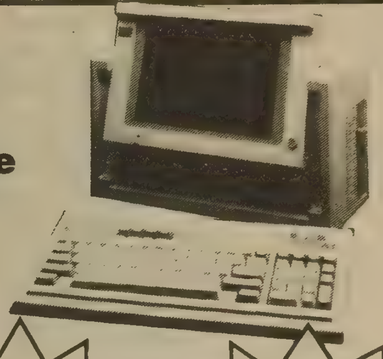

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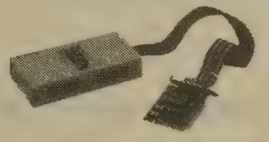

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IC Tester: 74xx, 40xx, 45xx, DRAM

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High Speed 8M EPROM Programmer HEP-808	$525
EPROM Programmer, EW-901B (1 Port)	$95
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EPROM Programmer, EW-704 (4 Ports)	$160
EPROM Programmer, EW-708 (8 Ports)	$235
EPROM Eraser (with Timer, 15 Chips)	$90
EPROM Programmer, BW-601 (1 Port)	$185
PAL Programmer PAW-401	$235
8748/49 Programmer UPW-481	$155
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EPS-011 Expansion Slot (4 Ports)	$39

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Printer Port Card	$18
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TEAC Floppy Disk Drive (360 KB)	$65
TEAC Floppy Disk Drive (1.2 MB)	$75
TEAC 3 1/2" Floppy Drive (1.44 MB)	$75
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Toshiba 3 1/2" Floppy Disk Drive (1.44 MB)	$75
Microscience HH-825 Hard Disk (20MB)	$200
Microscience HH-1090 (80MB 28ms)	$550
Microscience HH-1120 (120MB 28ms)RLL	$650
Microscience HH-1050 HD (44MB, 28ms)	$325
Seagate ST-125 Hard Disk (20 MB, 28ms)	$245
Seagate ST-138 Hard Disk (30 MB, 28ms)	$285
Seagate ST-225 Hard Disk (20 MB, 65ms)	$195
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OmniKey Plus	$105
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Star Printer NX-1000 Rainbow Color	$225
Epson Printer LX-810 (9-Pins, 180CPS)	$189
Epson Printer FX-850 (9-Pins)	$345
Epson Printer FX-1050 (9-Pins) wide	$455
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A4 Scanner/OCR	$225
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Logitech Trackman Serial	$85
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Microsoft Windows 3.0	$105
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MONITORS

Voltron 14" Flat Screen	$95
Quimax TTL 14" Monitor	$125
Nanao VGA Multisync 8060S	$545
Nanao VGA 9070S	$950
Relisys 14" VGA Monitor	$345
Relisys 14" EGA Monitor	$345
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RESOURCES

Calendar Of Events *continued*

Conference. San Francisco. Electronic Mail Association. Call: (703)522-7111.

October 23 Lotus 1-2-3 v3.1 Presentation. San Francisco. San Francisco Business Computers. Call: (415)788-5338.

October 23–25 Data Base: A Manager's Guide Seminar. San Francisco. Technology Transfer Institute. Call: (213)394-8305.

October 23–26 Visualization '90 Conference. San Francisco. IEEE. Call: Dr. Stephen Levine, (508)967-0798.

October 24 Intro To PC DOS Class. Oakland. DataNet. Call: 1-800-879-4181.

October 24 How To Automate Your Business Accounting System Seminar. San Francisco. J.C. Lukrich and Co., CPA. Call: Suzette, (415)864-6770.

October 24–26 Novell Enhanced Support Training Class. San Francisco. Novell Education Services. Call: (415)764-1400.

October 26 NetWare 286 System Administrator Class. Oakland. DataNet. Call: 1-800-879-4181.

October 27 PC Repair Class. Oakland. DataNet. Call: 1-800-879-4181.

October 27 Laptop & Communication Software Technical Forum. San Jose. JDR Microdevices. Call: Dan Urioste, (408)947-8881.

October 31–November 2 MacroMind Developer's Conference. San Francisco. MacroMind. Call: (415)442-0200, ext. 225 or 222.

October 31–November 2 UNIX Expo. New York. National Expositions Company, Inc. Call: Heidi Dethloff, (312)332-4650.

NOVEMBER

November 6–9 Real-Time Structured Analysis And Design Course. San Francisco. Integrated Computer Systems. Call: John Valenti, 1-800-421-8166.

November 10 Computer Mart. Cupertino. De Anza College. Call: (408)864-8581.

November 11 Computer Show. San Francisco. Fort Mason Shows. Call: (916)725-0228.

November 13–14 Train The Trainer Course. San Francisco. MacroMind. Call: (415)442-0200, ext. 225 or 222.

November 15 Accounting Systems Seminar. Oakland. David A. Simon, CPA. Call: (415)893-5753.

November 15–16 Interactive Multimedia Seminar. San Francisco. MacroMind. Call: (415)442-0200, ext. 225 or 222.

November 28–30 LANs And Image Communications: Applications For Increasing Productivity Conference And Exposition. Monterey. BIS CAP International. Call: Kathy Greeley, (617)893-9130.

NEWS & VIEWS

Continued from page 238

Underneath that waste of time is a press release from the people who promote PC Expo. Sit down for this headline, lest you get dizzy from the possibilities for excitement: "Andersen Consulting Executive Keynotes PC Expo in Chicago, September 25-27, at McCormick Place North."

Let me catch my breath, as I'm about to hyperventilate over this news. Should I call Hearst and have him stop the presses? No wait, the best is yet to come. The topic of the speech. Get ready. It's entitled, "Workstation: the Application of the 90's." I start to swoon just as I realize that this makes no sense. Huh? Workstation, the application?

Let's back up and look this over (knowing I'm going to find something weird). The guy giving the talk is Hugh W. Ryan, Partner and Director of New Age Group and Enterprise for Andersen Consulting. New Age? New Age stuff is wacko, nutball stuff, isn't it? Out of body experiences, crystals, herbal colonics. Maybe everyone who goes will get an herbal colonic. It might be amusing to report on it.

I figure that he can't *really* be New Age. But, I read further and think that maybe this guy actually is a New Age advocate. His speech is about the "new age" of workstation use and he'll explore "key emerging technologies, including: multimedia, image processing, video and audio, expert systems, and universal reality approaches."

Give me a break! "Universal reality approaches?" Bang a gong, why don't you. I like the way these New Age guys sneak in the nutball stuff at the end. "Yes, I'll be discussing database management, spreadsheets, telecommunications and THE ALIENS AMONG US!!!"

> **The ugly truth is that most press material is sent out to cater to the inflated egos of the owners of the companies paying someone to send out press material.**

It sounds like a speech to avoid, if you ask me.

So the pile isn't any smaller. The next press release is from Samna and it's headlined "AMI Professional Now Available for Hewlett-Packard NewWave 3.0." Gosh, let me make a note! The fifteen users of New Wave 3.0 should adore this free plug. (So should Samna, but I still don't care.) Under that is an announcement for the "LAN Primer," a book from M&T. And under that are twelve more of these things. Unfortunately, all these people use an expensive fibre-based paper that doesn't burn as well as it might. What a waste. ■

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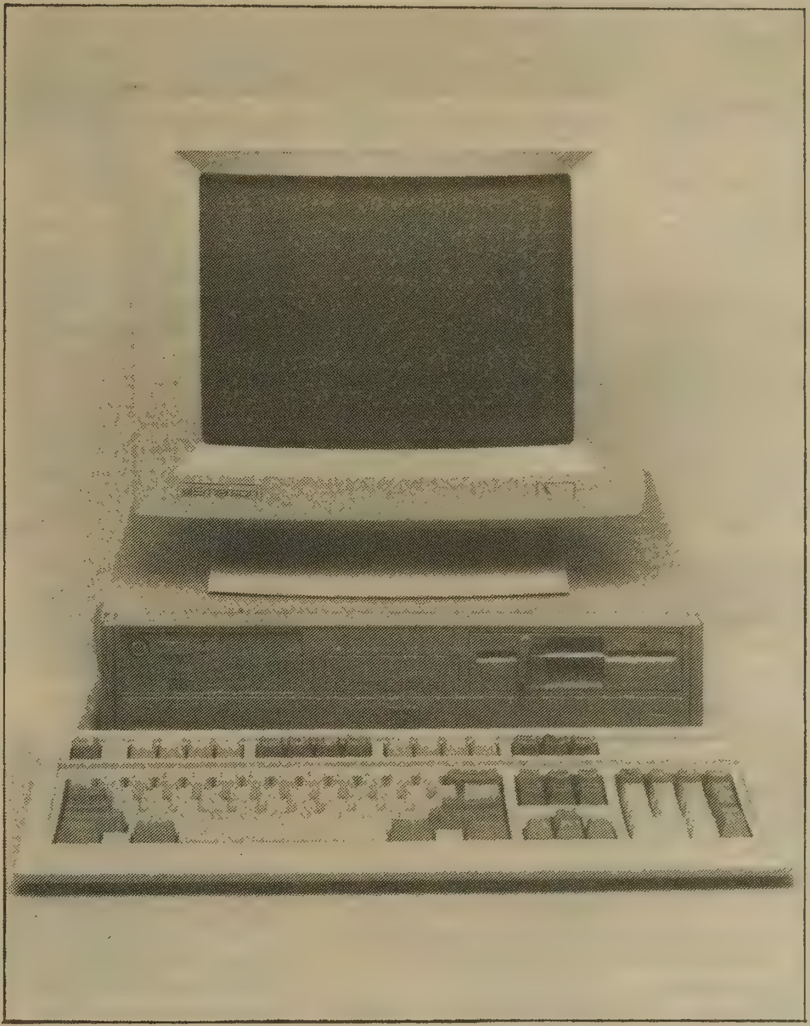

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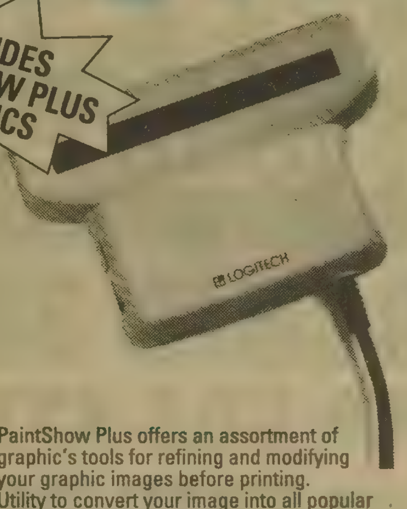

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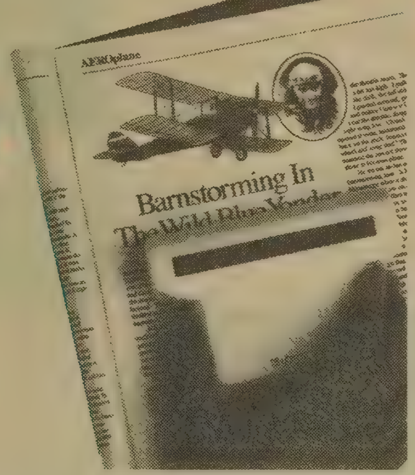

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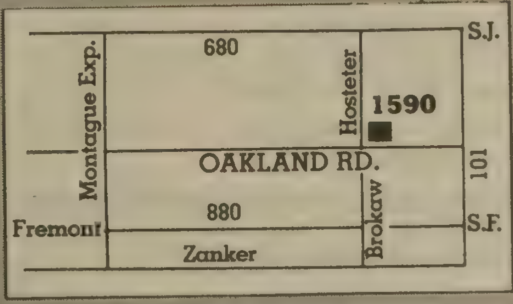

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The Darkside of the Moon BBS. (707)451-3323. 8-N-1, 24 hrs., 300/1200/2400/9600. 140 megs. Running Wildcat! multi-chat, game doors, email, shareware. Sysop: Stephen Cannon. [Exp. #74.]

The Other Woman. (707)938-3508. 24 hrs., 300/1200/2400. Desktop publishing, AutoCad & general IBM files. Fidonet mail, 200 megs storage. Sysop: Ron Thomas. [Exp. #74.]

The South Pole BBS. (707)643-8264. 24 hrs., For all computers. [Exp. #75.]

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Drug Abuse Information (DAIMP). 1-800-825-3736. 8-N-1, 24 hrs., 300/1200/2400. Drug information, statistics, bibliographies, forums, email, downloads and uploads. Free membership, reg. requested. Sysop: Greg Cason. [Exp. #73.]

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PROFESSIONAL ASSOCIATIONS

Artificial Intelligence Association. Individuals interested in learning about the use and application of AI. Call: Rita Zokaei, (415)574-8225. [Exp. #75.]

Digi—Dunces Un-Ominous. Occasionally-not-so-computer-friendly users. [Exp. #73.]

Independent Computer Consultants Assn. Referral Service. Designed to give public access to the knowledge and experience of Assoc. members, no fee. Call: Referral Service Hotline, (408)980-7272. [Exp. #77.]

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Independent Computer Consultants Association. Meetings: 3rd Wed., 6:00 pm. Meetings are open to non-members and members. Call: ICCA, (415)441-2948. [Exp. #75.]

Rracsa, For Sysops & Users. Meetings: 2nd Tues., 6:30 pm, CoCo's Restaurant, 1305 S. Mary, Sunnyvale. Call: Irv Hoff, (415) 948-2166. [Exp #73.]

Software Entrepreneurs' Forum. Call: Barbara Cass, (415)854-7219. [Exp. #75.]

United Sysops Association (U.S.A.). Meetings: 2nd Wed., 7:00 pm, call for location. SIG for BBS sysops and users. Call: Bill Strouse, (415)453-3321. [Exp. #75].

Women's Computer Society. Call: Tanya Halepota, (415)949-3936. [Exp. #75.]

Writer's On-line Association Of Technical Communicators. Meetings: Weekly, Berkeley. Call: Cynthia Kolnick, (415)673-5819. [Exp. #75.]

USER GROUPS

3COM

Bay Area 3Com User Group. Call: Ryan Cornin, (408)957-0943, or 354-7804. [Exp. #73.]

ACCOUNTING

Computer Associates User Group. Meetings: 1st month of quarter on 3rd Wed., Holiday Inn, 1500 Van Ness. Come share ideas and information with other local users of Computer Associates Accounting Software! Call: Beth E. Markus, (415)864-6770. [Exp. #75.]

San Francisco Bay Area Platinum User Group. Call: Steve Koss, (415)562-2754, or Jim Britton, (415)576-3209. [Exp. #75.]

AMIGA

ALF—Amiga Learners Forum. Meetings: 3rd Sun., 6:00 pm, Cupertino Library. Call: (408)262-9334. Beginners group. [Exp. #73.]

Amiga ACCESS (Amiga & Commodore Computer Enthusiasts Society). Meetings: 2nd Thurs., 7:00 pm, Livermore/Pleasanton. PD libraries. Call: Paul, (415)829-6053. [Exp. #73.]

ASCITEC: The Amiga Science & Technology Users Group. Meetings: 2nd Thurs:, 5-7 pm, Lockheed, B/157, Rm. 4-C, Sunnyvale. Scientific/Video Applications. Classes available. Call: (408)756-4268. [Exp. #74.]

AUM—Amiga Users Of Marin. Meetings: 3rd Wed., 7:30 pm, College of Marin, Science Center, Room 190. Call: Bob Galvan, (415)924-5384. [Exp. #74.]

AWEST Amiga Users. Meetings: 1st Wed., 7:00 pm, Computer Showcase, Geary at Masonic. Call: (415)584-8406. [Exp. #73.]

Northern California Amiga Club. Meetings: 2nd Sat., 2:00 pm, Rico's Pizza, 200 Hartnell, Redding. Call: (916)472-3237. [Exp. #75.]

Valley Computer Club (VCC). Meetings: 1st Wed., Turlock Jr. High School. C64/C128 Amiga and Commodore MS-DOS users group. Call: (209)529-8473 or 668-8636. [Exp. #75.]

APL

APL Bay Area Users Group. Meetings: 2nd Mon., 7:00 pm, variable. Call: Tibor Horvath, (415)283-5611. [Exp. #75.]

APPLE

ABUG—Apple Blossom User Group. Meetings: Apple II Group 1st Wed., Mac Group 3rd Wed. Write for info: P.O. Box 53323, San Jose, 95123. Call: (408)395-7900. [Exp. # 74.]

Apple II SIG. Meetings: 4th Thurs., 7:30 pm, Lynbrook High, 1280 Johnson Ave. (W. San Jose). Call: Fred Bernal, (408)258-0284. [Exp. #74.]

Apple IIGS SIG. Meetings: 3rd Tues., 7:00 pm, Wilcox High, 3250 Monroe St., Santa Clara. Call: Dave Cone, (415)322-7867. [Exp. #74.]

Apple SAC—Apple II. Meetings: 1st Wed. and 3rd Tues. Call: (916)991-7313. [Exp. #75.]

Appleworks SIG. Meetings: 4th Tues., 7:00 pm, Wilcox High, 3250 Monroe St., Santa Clara.

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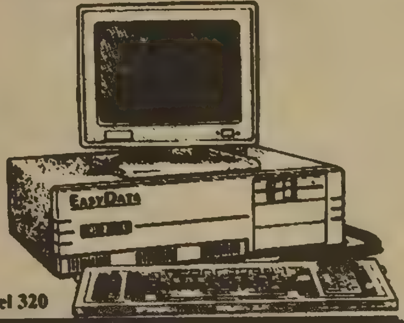

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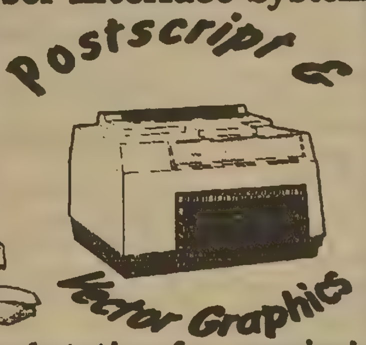

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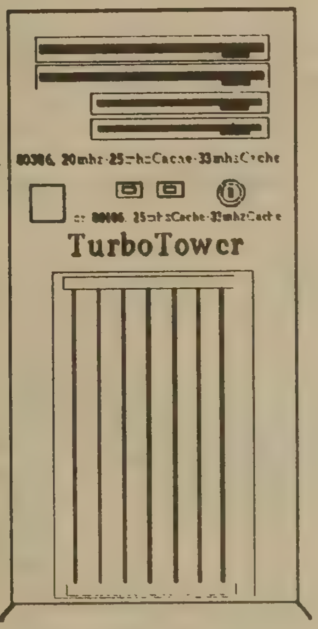

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San Francisco State Univ. Apple Core. Meetings: 2nd Tues., 7:00 pm, Hensill Hall, Rm. 205. An Apple II user group. BBSes, newsletter, demos, mentoring, swaps, DTP and telecom sub groups. Call: (415)771-5830. [Exp. #75.]

Tri Valley Apple II User Group. Meetings: 1st Thurs., 6:30 pm. Call: Dan Balsey, (415)828-6237 for meeting location. [Exp. #73.]

AT&T UNIX

AT&T Computer User Group-North Bay. Meetings: 1st Wed., new user education, 6:00 pm, program, 7:00 pm, San Francisco AT&T Bldg., 50 Fremont St. Call: Joe Mahoney, (415)584-6510; BBS (415)829-6027. [Exp. #77.]

AT&T Computer User Group-South Bay. Meetings: 3rd Wed., new user education, 6:00 pm, program, 7:00 pm, Sunnyvale AT&T Bldg., 1090 E. Duane Ave. Call: Joe Lipsig, (408)733-6522; BBS (408)946-7734. [Exp. #77.]

AT&T UNIX Computer User Group-South Bay. Meetings: 4th Wed., new user education, 6:30 pm, program, 7:00 pm, Sunnyvale AT&T Bldg., 1090 E. Duane Ave. Call: Thad Floryan, (408)985-7100; USENET, thad@cup.portal.com. [Exp. #77.]

COAST (CA Original Atari ST User Group). Meetings: 3rd Wed., 6:45 pm, 550 El Embarcadero, Oakland. Call: (415)945-1949. [Exp. #78.]

San Leandro Computer Club. Meetings: 1st Tues., 8:00 pm, San Leandro Community Library. Call: Keith Simmons, (415)887-2008. [Exp. #75.]

ATARI

ABACUS (Atari Bay Area Users Society). Meetings: 1st Sat. Call for place/time, (415)753-8483. [Exp. #74.]

Bay Area Atari Users Group (BAAUG). Meetings: 1st Mon., 7:30 pm, Agnews Hospital Auditorium, Palm Rd. and Circle Dr., San Jose. Call: Joe Fischer, (408)988-3065. [Exp. #77.]

San Leandro Computer Club. Meetings: 1st Tues., 8:00 pm, San Leandro Community Library. Call: Keith Simmons, (415)887-2008. [Exp. #75.]

South County Atari User Group. Meetings: 2nd Wed., 7:00 pm, San Jose Computers. Call: C. Ron Reade, (408)225-7162. [Exp. #77.]

ST-ACE (Atari Computer Enthusiasts). Meetings: 3rd Thurs., 7:00 pm, Baptist Church on Sebastepol Rd., Santa Rosa. Call: Hal Andersen, (707)542-1745. [Exp. #73.]

AUTOCAD

AutoCAD DCA Engineering Software Users Group. Meetings: 3rd Wed. Call for location. Call: Mike Foley, (415)734-0707. [Exp. #73.]

CAD/CAM

SF Bay Area C.A.S.E. Users Group. Meetings: Once per quarter. Call: David Plotkin, (415)842-6706. [Exp. #75.]

Textile Computer Users Group—TCUG. Meetings: Bimonthly, 1st Sun., 10:00–noon. Bedford Hotel, San Francisco. Call: (415)284-1635. [Exp. #75.]

COMMODORE

Cupertino Chapter Of 64/More Commodore User Group. Meetings: 3rd Sun., 6:00 pm, Cupertino Library. Call: (408)262-9334. [Exp. #75.]

CWEST Bay Area Commodore Users Group. Meetings: 3rd Wed., 7:00 pm, H. Hoover Mid School. Call: (415)626-9946; BBS: (415)431-4829. [Exp. #73.]

CWEST—Commodore 64/128. Call: (415)626-9946. [Exp. #75.]

Fairfield Commodore User Group. Meeting: 1st and 3rd Mon., 7:30 pm, Solano County Board of Education Bldg., Texat St., Fairfield. Amiga, Commodore 64, 128, PC-40-III. Call: (707)427-6805 or Newsshop BBS (707)446-7235. [Exp. #75.]

North Valley Chapter Of 64/More Commodore User Group. Meetings: 2nd Sat., 10:00 am, Milpitas Library. Call: (408)262-9334. [Exp. #75.]

San Jose Chapter Of 64/More Commodore User Group. Meetings: 1st Sun., 6:00 pm, Mercury Savings on Blossom Hill. Call: (408)262-9334. [Exp.#75.]

dBASE

Clipper SIG. Meetings: 3rd Tues., 8:00 pm, Ernst & Young, 55 Almaden Blvd. (Plaza Bank Bldg), San Jose. Special interest group of the Silicon Valley dBASE Language Group. Call: J.R. Whiple, (408)243-2796. [Exp. #73.]

Database Design SIG. Meetings: 3rd Tues., 7:00 pm, Ernst & Young, 55 Almaden Blvd. (Plaza Bank Bldg), San Jose. Special interest group of the Silicon Valley dBASE Language Group. Call: Mark Gerow, (408)326-3364. [Exp. #73.]

DataEase User Group. Meetings: 4th Thurs., 3:30 pm, 101 Montgomery St. Call: (415)945-7817. [Exp. #75.]

dBASE IV SIG. Meetings: 1st Tues., 7:00 pm, Ernst & Young, 55 Almaden Blvd. (Plaza Bank Bldg), San Jose. Special interest group of the Silicon Valley dBASE Language Group. Call: Fletcher Johnson, (408)283-1333. [Exp. #77.]

dBASE SIG/SFPCUG. Meetings: 3rd Mon., 6:15 pm, UCSF, 333 California St., San Francisco. Call: Mark Webster, (415)647-3675. [Exp. #78.]

dBXL/Quicksilver SIG. Meetings: 3rd Tues., 8:00 pm, Ernst & Young, 55 Almaden Blvd. (Plaza Bank Bldg), San Jose. Special interest group of the Silicon Valley dBASE Language Group. Call: Karl Snyder, (408)846-1814. [Exp. #73.]

FoxBase/FoxPRO SIG. Meetings: 3rd Tues., 8:00 pm, Ernst & Young, 55 Almaden Blvd. (Plaza Bank Bldg), San Jose. Special interest group of the Silicon Valley dBASE Language Group. Call: Mark Scaramella, (408)288-8423. [Exp. #73.]

Silicon Valley dBASE Language Group. Meetings: 2nd Tues., 6:30 pm, Ernst & Young, 55 Almaden Blvd. (Plaza Bank Bldg), San Jose. A non-profit volunteer organization dedicated to the education and development of database users and professionals. Call: Michael Masterson, (408)972-4889. [Exp. #73.]

DESKTOP PUBLISHING

Desktop Publishing SIG/SFPCUG. Meetings: 3rd Tues., 6:00 pm, 660 Market St., Ste. 215, San Francisco. Call: Eric Leong, (415)635-0159. [Exp. #77.]

EAGLE

Eagle Computer Users Group. Meetings: 2nd. Sat., 9:00-12 noon, Tandem Computer, 10435 N. Tantau Ave., Cupertino. Call: (408)972-1965. [Exp. #73.]

EPSON

Bay Area Epson Salts. Meetings: 2nd Tues., 7:30 pm, 2611 Broadway, Redwood City. Call: Joe, (415)364-9232, or Tom, (415)992-5475. [Exp. #73.]

FOCUS

NC FUSE—Northern California FOCUS Users. Meetings: quarterly. P.O. Box 61325, Sunnyvale, CA 94088-1325. Sharing FOCUS knowledge and experience. [Exp. #73.]

GENEALOGY

Family Roots Genealogy Program User Group. Meetings: Jan, March, May, July, Sept, & Nov. For info: Joseph L. Rick, 135 Leslie Dr., San Carlos, CA 94070-3459. Include SASE. [Exp. #74.]

Genealogy SIF/SFPCUG. Call: Tom Rubens, (415)255-9516.

IBM AND COMPATIBLES

Basic SIG/SFPCUG. Meetings: 3rd Mon., 7:30 pm, UCSF, 3333 California St., San Francisco. Call: Tom Rubens, (415)255-9516. [Exp. #77.]

C Language SIG/SFPCUG. Meetings: 2nd Mon. Call: Victor Pribyl, (415)355-8352. [Exp. #77.]

Columbia SIG/SFPCUG. Call: Dennis Tye, (415)566-0587. [Exp. #77.]

Columbia SIG/SFPCUG. Meetings: 3rd. Mon., 6:15 pm, UCSF, 3333 California St., San Francisco. Call: Bill Boyd, (415)387-2298. [Exp. #77.]

Desktop Publishing SIG/SFPCUG. Meetings: 3rd Tues., 6:30 pm, 660 Market St., Ste. 215, San Francisco. Call: (415)391-1333. [Exp. #77.]

DESQView SIG/SFPCUG. Meetings: 3rd Mon., 6:15 pm, UCSF, 3333 California St., San Francisco. Call: Jerry Stern, (415)387-2298. [Exp. #77.]

EastBay FOG. Meetings: 3rd Wed. All microcomputers, MS-DOS, CP/M. Call: (415)272-9099. [Exp. #75.]

Games SIG/SFPCUG. Meetings: 3rd Mon., 6:15 pm, UCSF, 333 California St., San Francisco. Call: Ron Feiertag, (415)255-9516. [Exp. #78.]

Investment Software Association, a SIG of San Francisco Business Computers. Meetings: 4th Tues., 5:30 pm, Donatello Hotel at Post and Mason. Call: (415)788-5388. [Exp. #75.]

Lotus 1-2-3 SIG/SFPCUG. Meetings: 3rd Mon., 6:15 pm, UCSF, 3333 California St., San Francisco. Call: (415)282-4100. [Exp. #77.]

MS Word SIG/SFPCUG. Meetings: 3rd Mon., 6:15 pm, UCSF, 3333 California St., San Francisco. Call: Vic Saravia, (415)929-1993. [Exp. #77.]

Napa Valley PC Users Group. Meetings: 2nd Wed., 7:30 pm, Buck's lower plaza, 10 Chapel Hill Dr. Call: Bob Kulas, (707)255-9241. [Exp. #73.]

NBUG, North Bay User Group. Generic computer club for all computer users. SIGs for Mac, IBM, Apple and Commodore, monthly newsletter and p.d. software. Call: (707)644-9327 or 552-0104. [Exp. #78.]

New Users SIG/SFPCUG. Meetings: 3rd Mon., 6:15 pm, UCSF, 3333 California St., San Francisco. Call: George Gold, (415)444-4899. [Exp. #75.]

P.I.E. IBM And Compatibles SIG. Meetings: 3rd Wed., 7:30 pm, General Disk Corp., 1530 Montague Expwy. Call: Clay Walker, (408)736-7704. [Exp. #74.]

PC Clone Users Group. Meetings: 2nd Mon., 7:00 pm, Fort Mason Center, Bldg. E, Rm. 287. BBS: (415)621-8425. Call: (415)861-9321. [Exp. #73.]

Peninsula Computer Club—KayFun. Meetings: 2nd Thurs., 7:30 pm, Social Room, 222 Laurel St., San Carlos. DOS and CP/M libraries. Call: (415)593-3391 or BBS (415)571-9259. [Exp. #77.]

Professionals SIG/SFPCUG. Meetings: 2nd Thurs., 6:15 pm, Call: Kendall Callas, (415)821-1310. [Exp. #77.]

San Francisco Business Computers. Meetings: 4th Tues., 5:30 pm, Donatello Hotel at Post and Mason. Call: (415)788-5388. [Exp. #77.]

San Francisco Computer Society. Meetings: 1st Mon., 1350 7th Ave., San Francisco. Call: (415)929-0250. [Exp. # 74.]

San Francisco PC Users Group. Meetings: 3rd Mon., 7:30 pm, UCSF Laurel Heights, 333 Califronia St., San Francisco. Call: (415)221-9166. [Exp. #77.]

Teachers SIG/SFPCUG. Meetings: 3rd Mon., 6:30 pm, UCSF, 3333 California St., San Francisco. Call: (415)982-4221. [Exp. #75.]

Telecommunications SIG/SFPCUG. Meetings: 3rd Mon., 6:15 pm, UCSF, 333 California St., San Francisco. Call: Tom Rubens, (415)255-9516. [Exp. #78.]

TRS Nybblers. Meetings: 2nd Fri., 8:00 pm, Chabot College, Bldg 1560. MS-DOS, UNIX, OS-9, CP/M. BBS (415)352-8442. Call: Ken Bailey, (415)462-4442. [Exp. #74.]

WordPerfect SIG/SFPCUG. Meetings: 3rd Mon., 6:30 pm, UCSF, 3333 California St., San Francisco. Call: (415)821-1310. [Exp. #77.]

KAYPRO

Peninsula Computer Club—"KayFun." Meetings: 7:30 pm, Social Room, Lauren St., San Carlos. CP/M and DOS libraries. Call: (415)571-9259. Voice: 593-9981. [Exp. #73.]

KNOWLEDGE-MAN

Bay Area KnowledgeMan (And Guru) User Group. Meetings: 1st Tues., 6:30 pm, JNZ, Inc., Lafayette. A forum for discussion and info. concerning mdbs products, esp. KnowledgeMan and Guru. Call: (415)947-4878. [Exp. #75.]

LAPTOPS

Bay HPX HP Laptops & Handhelds. Meetings: 2nd Sat. Call: Michael Felsenstein, (415)564-8279. [Exp. #74.]

MACINTOSH

AHUG—Apple Hypercard Users Group. Meetings: 1st Fri., 7:00 pm, Cupertino. Guest speakers & stack downloading. Call: (408)974-1707 [Exp. # 74.]

MacDiablo Macintosh Users Group (MDUG). Meetings: 4th Wed., 7:30 pm, Community Rm., Glendale Federal Bank, 3001 Crow Canyon Rd., San Ramon. Call: Harvey Scudder, (415)828-4995, Rym Maggiora, 829-5501. [Exp. #73.]

Macintosh Application Group. Meetings: TBA. Call: (415)751-9185. Main focus is application support for the user and language programming, all levels. Newsletter is in the making. [Exp. #73.]

MacSEF. Meetings: 3rd Tues., 7:00 pm, Call: Tony Meadow, (415)644-9400. [Exp. #78.]

North Coast Mac Users Group. Meetings: 3rd Wed., 7:30 pm, Sonoma State University, Darwin Hall, Rm. 108. Not a student organization, annual dues for individuals and businesses. Call: Reed Hopkins, (707)542-1089. [Exp. #74.]

P.I.E. Macintosh SIG. Meetings: 2nd Thurs., 7:00 pm, Institute of Computer Technology, 1196 Lime Dr., Sunnyvale. Call: John Alston, (408)735-8247. [Exp. #74.]

Peninsula Apple/Macintosh Users Group. Meetings: 3rd Thurs., Ampex cafeteria, Redwood City. Call: Les Dyer, (415)591-2124. [Exp. #75.]

MULTIMEDIA

MacroMind Multimedia User Group. Three active SIGs: Lingo, Production/Design, Video. Call: Ken Durso, (415)442-0200 ext. 202. [Exp. #78.]

The International Interactive Society—IICS. Meetings: 2nd Tues., 7:00 pm, UCSF Laurel Heights Conference Center. Call: (415)328-7318. [Exp. #75.]

MUSIC

MuSIG. Meetings: 1st Sun., 2:00 pm. Various locations. Call: (415)858-1493. [Exp. #75.]

NETWARE

Central Valley NetWare User Group. Meetings: To be determined Call: Rick Utley, (209)825-7063. [Exp. #75.]

NEURAL NETWORK

Neural Network User Group. Call: David (415)644-2369. [Exp. #78.]

ORACLE

San Francisco Oracle User Group. Meetings: 2nd Wed., Various locations. Call: (415)894-4549. [Exp. #73.]

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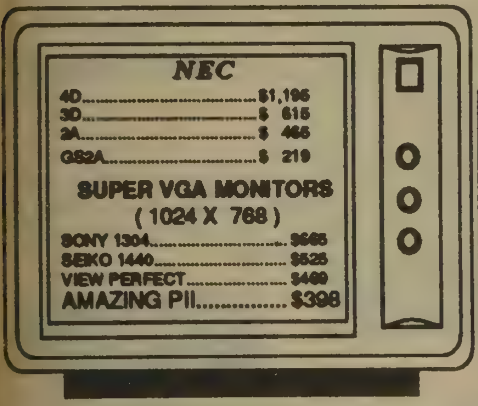

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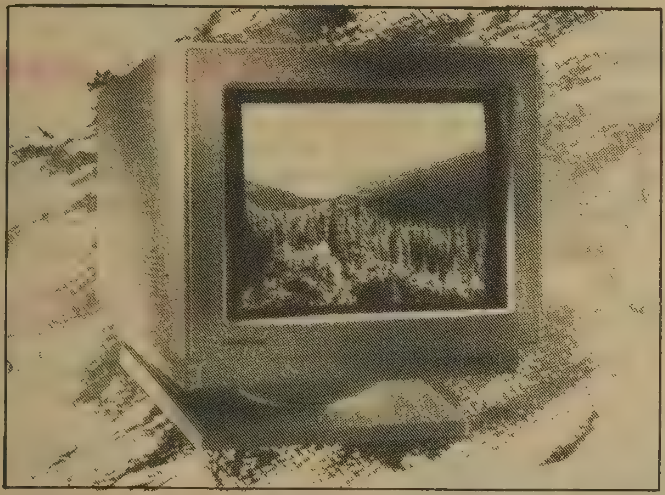

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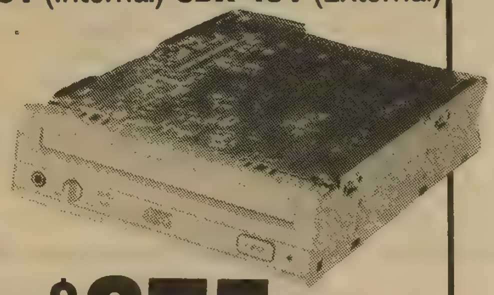

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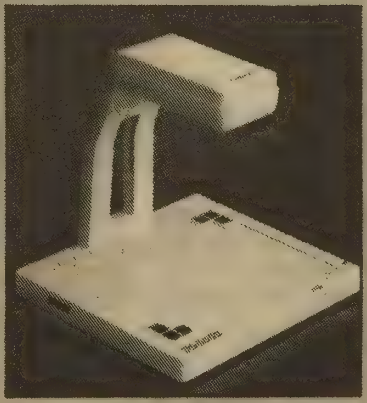

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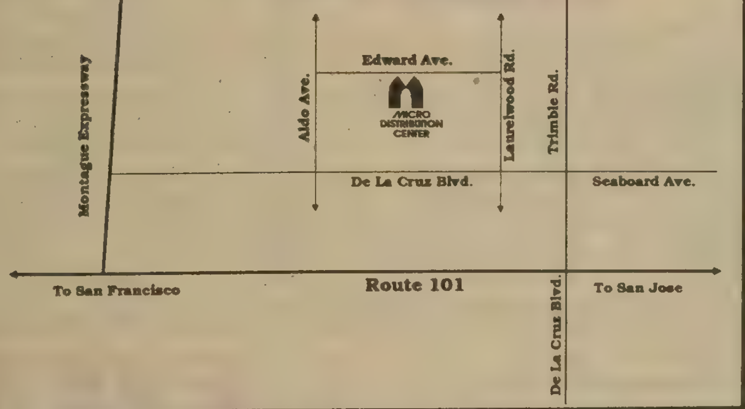

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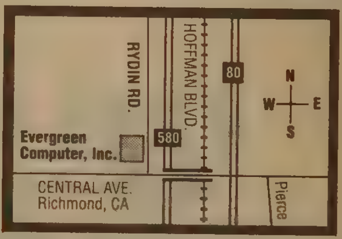

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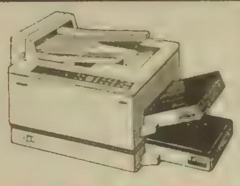

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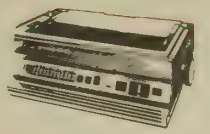

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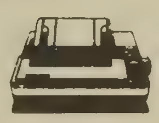

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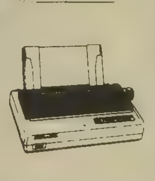

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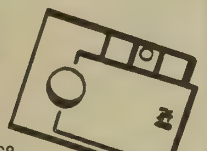

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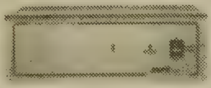

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	2-8MB EXP BRD w/8MB	1497259+	$3,620	$1,463
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	2MB MODULE	6450604	$ 950	$ 285
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70-A21,A61, B21,B61	1MB MODULE	6450603	$ 450	$ 110
	2MB MODULE	6450604	$ 950	$ 285
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80-All Models	2-8MB EXP BRD w/6MB	6450605+	$4,185	$1,147
	2-8MB EXP BRD w/8MB	6450605+	$5,480	$1,406
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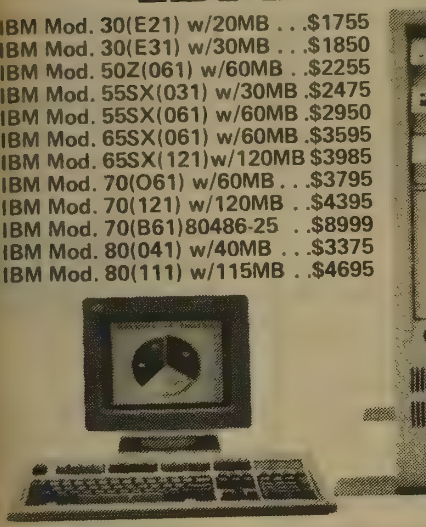

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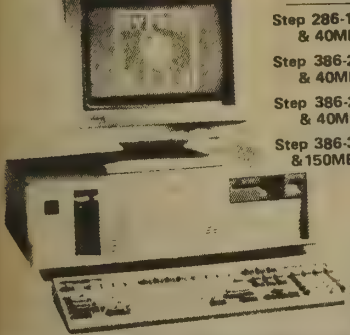

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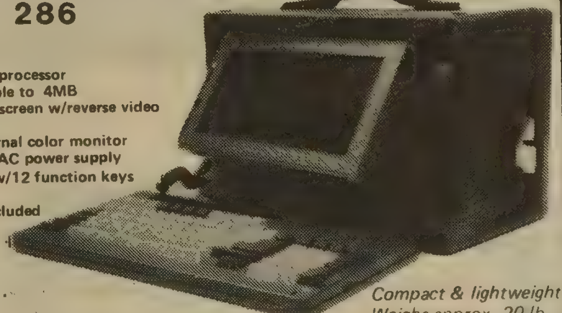

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386's also available

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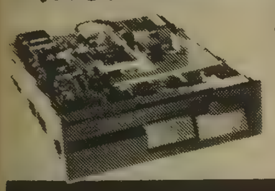
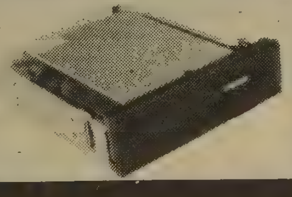
DRIVES



5.25" DRIVES

Teac, Fujitsu, Toshiba

360K	1.2MB
$59	$69



3.5" DRIVES

Teac, Sony, Fujitsu, Toshiba

720K	1.44MB
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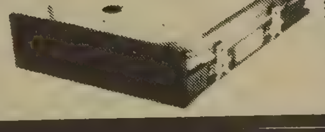

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NEC Prospeed 386SX-100	$3499
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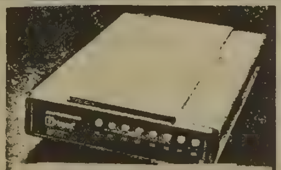

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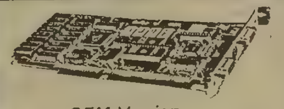

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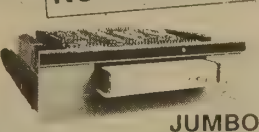

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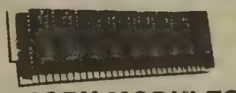

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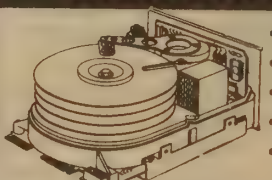

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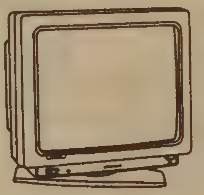

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Conner 80 MB	509
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DTC 7287 1:1 F/HDC (RLL)	98
DTC 6280 ESDI	140

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MISC.

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101 Key	35

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LANDMARK = 115

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LANDMARK = 56

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☐ Socket 80387 & AMI BIOS
☐ 2X32 Bit, 5X16 Bit, 1X8 Bit Slots
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LANDMARK = 43

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☐ 1X32 Bit, 5X16 Bit, 2X8 Bit Slots
☐ Real Time Clock w/Battery Backup
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☐ 101 Enhanced Keyboard

$949 386-25 MHz

LANDMARK = 33

☐ 1 MB Ram Expandable to 8 MB
☐ Socket 80387 & AMI BIOS
☐ 1X32 Bit, 5X16 Bit, 2X8 Bit Slots
☐ Real Time Clock w/Battery Backup
☐ 1.2 MB Floppy Drive
☐ 1:1 2 FD/2 HD Controller
☐ 2 Serial, 2 Parallel, 1 Game Port
☐ 200W PS w/Case Holds 5 Drives
☐ 101 Enhanced Keyboard

$599 386SX-16 MHz

LANDMARK = 21

☐ 1 MB Ram Expandable to 4 MB
☐ Socket 80387 & AMI BIOS
☐ 6X16 Bit, 2X8 Bit Slots
☐ Real Time Clock w/Battery Backup
☐ 1.2 MB Floppy Drive
☐ 2 FD/HD Controller
☐ Serial, Parallel, Game Port
☐ 200W PS w/Case Holds 5 Drives
☐ 101 Enhanced Keyboard

$579 286-20 MHz

LANDMARK = 26.5

☐ 512K Ram Expandable to 4 MB
☐ Socket 80287 & AMI BIOS
☐ 6X16 Bit, 2X8 Bit Slots
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$459 286-16 MHz

LANDMARK = 21

☐ 512K Ram Expandable to 4 MB
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☐ Real Time Clock w/Battery Backup
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$389 286-12 MHz

LANDMARK = 16

☐ 512K Ram Expandable to 4 MB
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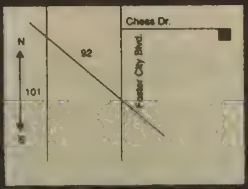

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PARADOX

Paradon SIG/SFPCUG. Meetings: 3rd Mon., 6:15, UCSF, 333 California St., San Francisco. Call: Richard Haven, (415)549-9109. [Exp. #78.]

San Francisco Paradox User Group: BAPALS. Meetings: 4th Tues., 4:00 pm, SF State Downtown Center, 814 Mission St., Suite 206. Call: Brad Jung, (415)287-5833. [Exp. #75.]

PROGRAMMING LANGUAGES

Basic SIG/SFPCUG. Meetings: 3rd Mon., 6:15 pm, UCSF, 3333 California St., San Francisco. Call: Ton Rubens, (415)255-9516. [Exp. #77.]

Fourth Interest Group Of North Bay. Meetings: 3rd Sat., 1-5 pm, 2055 Center St., Berkeley. Tutorial at noon. Call: Leonard Morgenstern, (415)376-5241. [Exp. #73.]

Smalltalk/V User Group. Meetings: Last Thurs., 6:30 pm. Call: David Freihofner, (415)362-4283. [Exp. #75.]

Smalltalk/V SBUG (South Bay User Group). Meeting: 2nd Thurs., 7:00 pm. Call: Dave O'Neal, (408)929-1969. [Exp. #75.]

R:BASE

East Bay R:Base User Group. Meetings: 4th Thurs., 8:30 am, Call: David, (415)548-4927. [Exp. #75.]

Peninsula R:Base User Group (PR:BUG). Meetings: 2 Meadowsweet Lane, San Carlos. Call: (415)592-5033. [Exp. #73.]

SALEMAKER

Bay Area SaleMaker Plus User Group. Meetings: 3rd Wed., 6:30 pm, various locations. Call: Judy, (415)964-1500. [Exp. #78.]

SQL

SQL_Forum. Meetings: 1st Thurs., 6:30 pm, 394 Pacific Ave., San Francisco. Discusses client/server computing and SQL database servers. Speakers, demos. Call: (415)695-2748. [Exp. #77.]

SQL Server User Group. New, call for information. Call: Patty Sellers at Marathon Systems, (415)362-0500. [Exp. #75.]

TEXAS INSTRUMENTS

Texas Instruments Professional Computer Users Group. Meetings: 4th Thurs., Magnolia Inn, 176 S. Bernardo, Sunnyvale. Call: Thor, (415)386-5237, or Steve, (415)968-9543. [Exp. #76.]

VENTURA PUBLISHING

Ventura SIG/SFPCUG. Meetings: 3rd Tues., 6:30 pm, 660 Market St., Ste. 215, San Francisco. Call: (415)391-1333. [Exp. #75.]

WINDOWS

Windows 3 & Applications SIG/SFPCUG. Meetings: 3rd Mon., 6:15 pm, UCSF, 333 California St., San Francisco. Call: Ron Person, (707)539-1525. [Exp. #78.]

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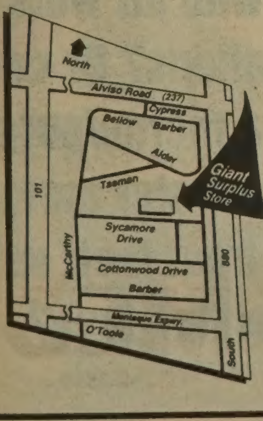
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Press Releases, Press Releases Everywhere But Not A Drop To Drink

or Advice To Promoters: Send Cognac Instead

BY JOHN C. DVORAK

Publicity drives the computer industry. It's almost sickening to get on a press release list. This isn't because once in a while you find out about some new product. I wish that more of the mail would be about fascinating new products. The ugly truth is that most press material is sent out to cater to the inflated egos of the owners of the companies paying someone to send out press material.

It was a light mail day in August when I did this column. Only a small pile of forty or so useless press releases. I'm going to go over this day's letters with you, and you can tell me if I'm wrong about the nature of the computer industry mail.

First off, there was nothing of substance in today's mail except my Diners Club bill, which I won't detail.

OK. On the top of the pile there is a huge envelope from the Waggener Group, the Microsoft mouthpiece in Portland. Inside is a press kit with a press release that has the following headline: "Microsoft Announces Broad OEM Support for OS/2 1.21; 30 Vendors to Ship by September 1990."

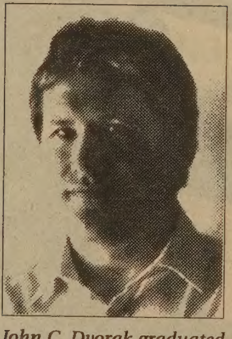
DVORAK'S LAST COLUMN

Oh, heart be still. Heck, I just pushed back in the lounge chair and popped open a Bud. Life doesn't get better than this. Front page news. Apparently Brenda Hansen at Microsoft and Claire Lematta at Waggener dreamed up this gem of an announcement. Congratulations for making my day with the good news! I didn't even bother to read this announcement, since I was so giddy I didn't know if I could hold the page steady.

So I went on to the next fine announcement. So what did I discover? Aha, a press release in a large envelope from Wolfram Research. Ooops, here's another one from Wolfram. Gads, another. AND another. Migosh still another. Funny, they all look the same. Let's see what's inside.

Hmmm, it's a letter from someone named Jane O. Rich. A likely story. Its salutation is "Dear Journalist." How personal. There are two enclosures. One is a long diatribe about Mathematica; the other is announcing Mathematica availability on the Convex C Series Computer. Like I care.

Let's see what's in these other envelopes. I open them to find that they are all the same. Curiously, they are all addressed to John C. Dvorak at the same address. The second line is different for each one, though. One says *MacUser*, one says *PC Computing*, one says *PC Magazine*, etc. I wonder if, as mathematicians, the people at Wolfram figure that sending me the exact same thing five times means I'll write about it five times.



John C. Dvorak graduated from the University of California. He is a contributing editor of PC Magazine *and* MacUser, *and is considered by many to epitomize the contrarian view of things—a charge that he vehemently denies. Dvorak's motto is: If you have nothing nice to say, then don't say anything at all.*

You have to wonder. Do they think there are five different guys at the same address who have the same name but who all work for five different publications? Or can't they figure out how a merge/purge works? If they can't master merge/purge, then why should I trust their software for the Convex mini-Cray? It makes no sense.

So I read further into Jane's letter. She says that she has added many new names to the press list. Yeah, they're duplicates!

It's bad enough getting useless information in the mail, but wh needs more than one copy? No wonder the country's productivity i going down the tubes. And it's not as though Jane O. Rich couldn look over the mailing list. She's not sending out a million copies c this, is she?

So I chuck all this into the waste can, figuring poor Jane will ge enough heat once this paper hits the stands. Onward.

OK, here's a press release from ParcPlace Systems. Who dreamt u this name for a company? A Monopoly nut? This press release says "ParcPlace Systems Announces Objectworks C++ Release 2." Hey, never saw release 1!!

An interesting line in the press release says that this language allow programmers to build "robust" applications efficiently. I think tha means the same as "bloated," but I'm not sure. I finally find the pric after reading through four pages of drivel to discover that this runs o a Sun SPARCstation and it costs $3,000!!

Man alive. Where did these people come from? Mars? Oh, I'm sur a few old mini die-hards who like paying big bucks on somebod else's tab will soak up a few copies, but this kind of thing is from th dark ages. If these guys would release such a product for the PC a $49.95 and advertise it in *PC Magazine* they'd make hundreds o millions. Hey, guys, do you think Bill Gates is worth TWO BILLIO DOLLARS because he sold compilers for $3,000?? Get real.

Besides that, why am I getting this crap-ola, I don't write about Su software anyway. Check your mailing list, folks!

Are you starting to see why people think I'm such a grouch? It' these press releases that make me nuts.

Next one. Oh man, now I get a press release from Multisoft tellin me that they're going to release a new product someday soon! It's no to be talked about until they send me the real press release! Gads Boys, this kind of thing is what the phone is for. Into the round in basket it goes.

Do they think there are five different guys at the same address who have the same name but who all work for five different publications? Or can't they figure out how a merge/purge works? If they can't master merge/purge, why should I trust their software for the Convex mini-Cray?

Continued on page 216

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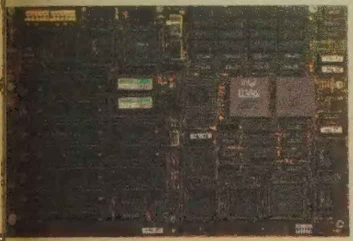

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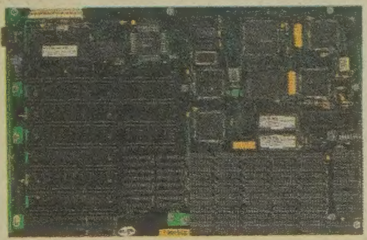

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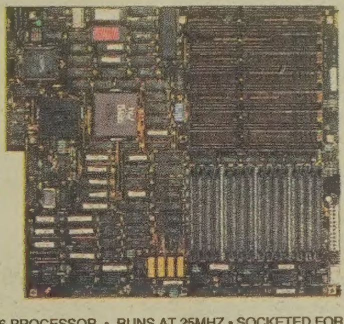

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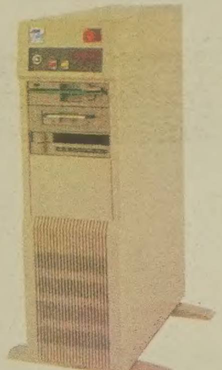

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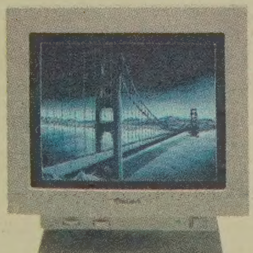

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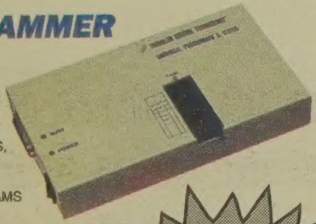

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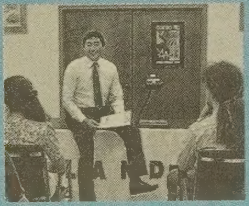

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Saturday, September 15th from 8:00 to 5:00 is our Annual Tent Sale where we pack our parking lot with products on sale at tremendous discounts. We spend the day solving upgrade problems, sharing information, and saving you money!

On September 29th, JDR's Director of Engineering, Derick Moore will be at our Technical Learning Center discussing the latest motherboard developments. Derick will be joined by a representative from MicroSoft who will demonstrate Windows 3.0 in depth.

Extra Time! Extra Savings! Extra information! September truly is a value-added month, so plan to join us! You and your questions are always welcome.

—*Dan Urioste, Manager*

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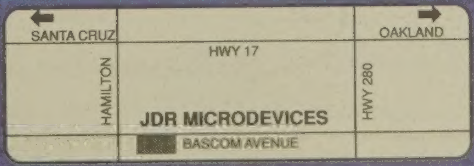

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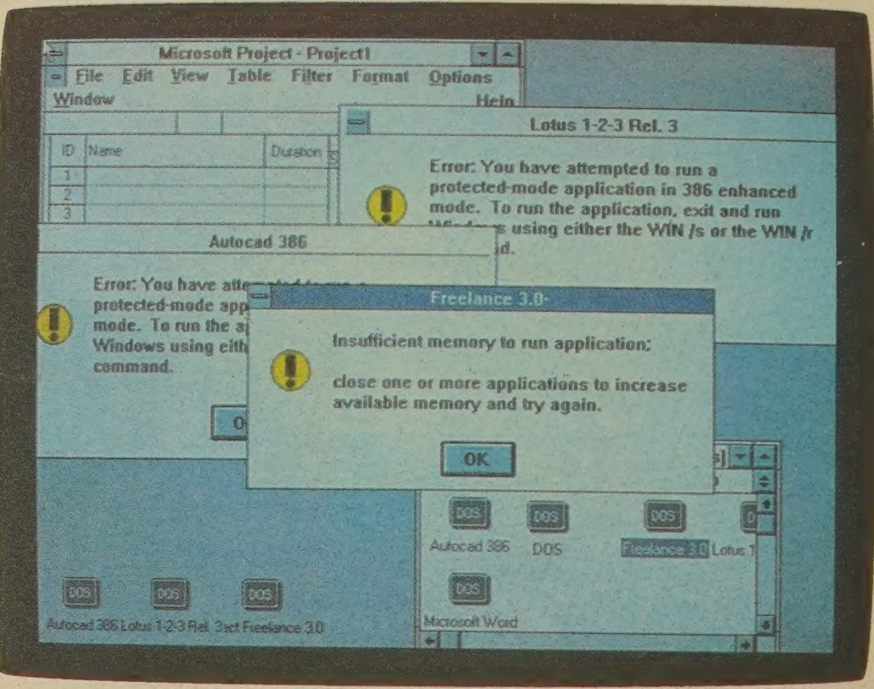

Microsoft Project - Project1
File Edit View Table Filter Format Options
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Help
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2
3
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Autocad 386
Freelance 3.0
OK
Autocad 386
DOS
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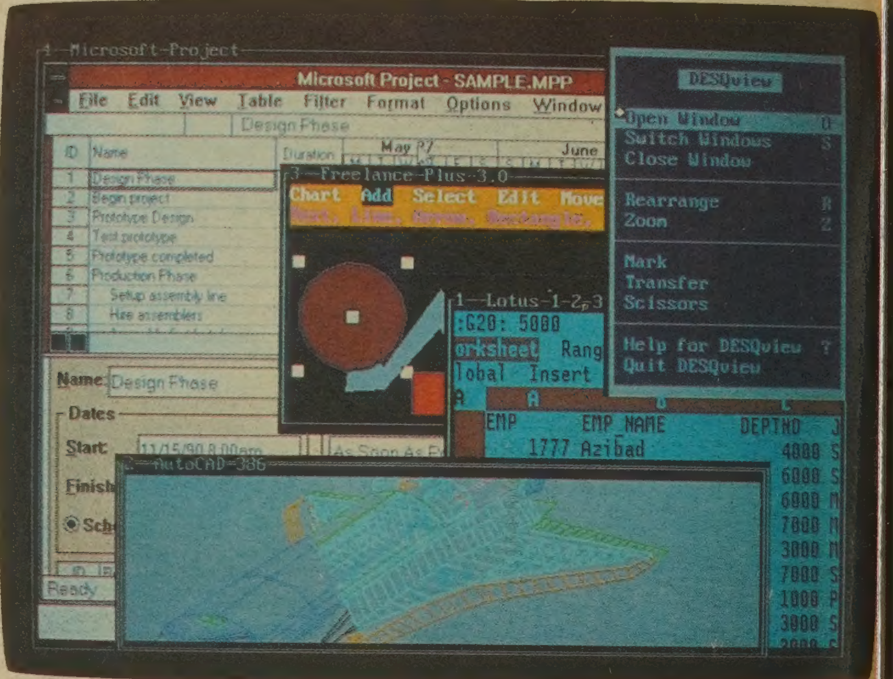
Error: You have attempted to run a protected-mode application in 386 enhanced mode. To run the application, exit and run …s using either the WIN /s or the WIN /r …d.

Error: You have atte… protected-mode app… mode. To run the a… Windows using eith… command.

Insufficient memory to run application:

close one or more applications to increase available memory and try again.

Windows 3.0. The multitasking, windowing environment.



1—Microsoft-Project
Microsoft Project - SAMPLE.MPP
File Edit View Table Filter Format Options Window
Design Phase
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Quit DESQview

DESQview 386 2.3. The multitasking, windowing environment.

Are you still using MS-DOS programs on your PC?

You may want to use DESQview as your primary operating environment.

The new DESQview 2.3 and DESQview 386 2.3 let you use your favorite DOS and DOS-extended programs in windows side-by-side on 80286, 80386 and i486 PCs. As you can see above, you can even run Windows programs within DESQview 386. So the next time you get error messages like the ones at the left in Windows, remember how the same set of programs look running in DESQview.

Whatever standard you use—DOS, extended DOS or Windows—DESQview is still the best way to get the most out of the hardware and software you own today.

DESQview. The obvious choice.

Quarterdeck

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This comparison was made using a system like the one you might run: Both shots show an ALR FlexCache 33/386 running DOS 3.3 with VGA display adaptor, Novell NetWare v3.01 Rev. A, with IPX/SPX v3.01 Rev A, Microsoft Mouse 7.00, and Microsoft SMARTDrive v3.03 disk cache. Buffers were set to 20. For the Windows screen, we ran Microsoft Windows 3 HIMEM.SYS and EMM386.SYS. For the DESQview screen, we ran QEMM 386 v5.1.

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